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ABSTRACT

Two parallel and complementary studies of Language Modelling and its relation to the development of communicative competence in the young child are reported. Over a 6-month period, Study 1 involved weekly naturalistic observations (in the home) of the nature and quality of the linguistic stimulation offered by mothers to their children between 2 and 4 years of age. The eight homes visited represented black and white families, with high and low incomes, in suburban and inner city settings. The differing maternal language behaviors observed seemed to reflect differing basic premises held by middle and working class mothers about infancy and early childhood. Language usage is one of the areas affected. It is suggested that intervention programs help mothers to learn more about child development and include language programs. Study 2 tested the language usage of 40 preschool children of differing socioeconomic backgrounds in three basic areas of competence: perceptual, cognitive, and linguistic. The results were used to plan training sessions in communication skills appropriate to each child's needs. Pretests and posttests indicate that children benefitted by such training over the short term. Appendixes are included. [Not available in hard copy due to marginal legibility of original document.] (NH)

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Harvard Graduate School of Education

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Preface

This is the sixth and final report of a research project dating from January 1, 1969. Under a contract with the Office of Economic Opportunity (No. B99-4804) funding was provided in March, 1969, and the major work of the project got under way in April, 1969. Funding by OEO terminated on June 30, 1970. Partial support for the project was also provided by the Milton Fund of Harvard University. In addition to the Project Director, regular research staff members throughout 1969-70 were Rhoda Goodwin and Pamela Almeida, who were the Home Observers in Study I, and Dr. Jean Berko Gleason, Barbara Mandelkorn, and Kay Atkinson King in Study II. This Report was prepared in the Fall of 1970. It attempts to summarise the main points of the pilot studies carried out in this first year of the project, and it incorporates most (though not all) of the material dealt with in earlier reports.

Acknowledgements

For their generous assistance with the sampling of families in Study I, we would like to express our thanks to Dr. Miriam Fiedler of the Maternal-Infant Health Study, The Children's Hospital, Boston, and Dr. Lee Willerman of the Perinatal Research Branch, N.I.H., Washington. We are also indebted to the mothers and children in the Home Observation Study for their kind hospitality and cooperation throughout our visits. For providing the use of her school and access to her pupils for Study II, we are grateful to Mrs. Lisa Pershouse, Director of the Central Nursery School, Cambridge. We would also like to express our appreciation of the hospitality, during the early phases of Study II, of the teachers and staff of the Peabody School (Grade I), Cambridge, the Washington St. Cooperative Nursery, Brighton, the Harriet Tubman Settlement House, Boston, and the Bromley Heath Day Care centre, Boston.

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PART I

STUDY I

Communicative Competence and the Disadvantaged Child:

Naturalistic Observation of Mother-Child Verbal Interaction in the Home

OVERVIEW

For the past year, the Psycholinguistics Project at the Harvard Graduate School of Education has been conducting two parallel and complementary studies of Language Modelling and its relation to the development of communicative competence in the young child. The studies have had the practical aim of investigating the development of communication skills in disadvantaged preschoolers. We have viewed the development of communicative competence as being highly dependent on the nature and quality of the language models the child is exposed to in his early years, and we have studied this child-model interaction both naturalistically (Study I) and experimentally (Study II).

In Study I we conducted naturalistic observations in a cross-section of Boston homes (ranging from "advantaged" to "disadvantaged") of the nature and quality of the linguistic stimulation offered by the mother as primary language model to children between 2 and 4 years of age. Trained observers made weekly visits (over a six-month period) to observe and record the language exchange between mother and child in a small, representative sample of eight homes -- black and white, low and high income, inner city and suburban. We observed the mother-child communication practices at home with the double aim of (i) systematically describing the varieties of language usage across homes, and (ii) of attempting to appraise the effects of certain kinds of domestic language patterns on the development of the disadvantaged child's own communication skills. A large amount of recorded data was collected and transcribed, and data analyses were designed to determine (i) the similarities and differences between families in their patterns of verbal communication with their children, and (ii) to assess from the point of view of the developing child, the strengths and weaknesses in the patterns of language exchange within particular families.

While Study I attempted to identify some of the factors in the early language environment of the home which might influence the eventual acquisition of communicative competence by the growing child, the experimental Study II, on the other hand, attempted to look more closely at the nature of the communicative process itself, both within and between children. Working with a variety of preshcoolers (black, white, "advantaged", "disadvantaged") we tried to analyse not only the main characteristics of the communication process but also how these basic ingredients interact with the factors of age and environmental opportunity. In the Assessment Phase of Study II a battery of tests was developed to measure a chil's skill in actively using language for communication purposes in two-person communication "games". The assessment measures probed the strengths and weaknesses of each child's pattern of communication skills, and the results were used to plan training sessions appropriate to the children's needs. In the Training Phase of Study II selected disadvantaged preschoolers who scored low on our communication tests underwent special tutoring sessions in structured communication situations with an adult language model. The emphasis in these pilot training sessions was on developing the child's ability (via active use of language) to construct descriptive messages about factual material. In a final Evaluation Phase of

Study II trainee children were compared with a group of control children on measures of communicative ability.

This first year of research into a little explored problem has essentially been a pilot one, with a great deal of time devoted to the pretesting of observational and recording techniques in Study I, and to the development of experimental techniques in Study II. Due to the inherent difference in the two kinds of data generated by these studies, the results from them stand (as of Aug. 31, 1970) at different stages of completion. The more controllable, more "visible" response data from Study II have given us quicker feedback about the success of our efforts there. In Study I, on the other hand, the data were completely controlled by the producers, viz. the mother and child. We spent so much care and time in ensuring the collection of high-quality observational and recording data in Study I, that our analyses have only begun to scratch the surface of the wealth of verbal transcription data. A detailed account of both studies now follows in the next two sections.

PART 1

Study I: Naturalistic Observation of Mother-Child Verbal Interaction in the Home

Background

Students of language research have generally agreed upon the beneficial effects of a rich, varied parental language for the development of the child's own verbal ability (Ausubel 1966, Cazden 1966, May 1966, Milner 1951, McCarthy 1954, Raph 1965). Many of these same reviewers paradoxically conclude that while parent-child verbal interaction appears to be critical for language development, very few naturalistic, observational studies of this interaction have been conducted. Recent studies by Plumer (1970) and Baldwin (1970) attest to this lack of observational, descriptive data on language interaction in the home. A start has been made on plugging this data gap by a handful of recent thesis studies (Horner 1968, Bloom 1968, Phillips 1970, Plumer 1970, Tulkin 1970). These students have turned their attention to mother-child language behavior and, with the exception of Phillips, have conducted their observations in the home. Unfortunately, however, not all of these studies have been overlapping enough or had a broad enough focus to provide us with reliable generalisations about the complexities of parent-child verbal interaction. Bloom and Horner both made specialised analyses of the language of the child, Phillips concentrated on the mother's speech, and only Tulkin, and Plumer especially seem to have tackled the complex problem of measuring the interaction of mother and child.

With the above exception, for the most part the majority of researchers interested in the relation between domestic environments and language development have preferred to bring mothers and children into the laboratory where they can study the interaction during artificial play situations. Under the impetus of theoretical speculations by Strodtbeck, 1965 (about the "hidden curriculum" in the middle-class home) and by Bernstein, 1962 (about social class differences in the use of "elaborated" and "restricted" language codes), laboratory studies of social class differences in maternal language styles have burgeoned. But even among the most representative of these (like the much-quoted research of Hess and his colleagues, 1965, 1968) there is usually very little analysis of the mother-child verbal interaction per se.[1] Most of these laboratory sessions are usually analysed in terms of teaching technique and content, not language exchange.

This failure to conduct naturalistic observations of domestic language environments and the predilection for controlled, laboratory studies of subcultural differences in parental language practices have led to serious problems in the generalisability and applicability of results from this kind of research. A crisis of confidence has been demonstrated by the controversy in recent research literature between Bee and her colleagues (Bee et. al., 1969, 1970) and Sroufe (1970) over the problem of the assessment, interpretation and implications of social-class differences in mother-child interaction and communication patterns. Too few social scientists have conducted the time-consuming but valuable naturalistic studies which would provide valid, descriptive data on mother-child interaction. Too much "short-cut" research has involved bringing mothers and their children into artificial laboratory settings for observation, posing them tasks of dubious relevance to the

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real world, and then making questionable, retroactive inferences from the data about the quality of the early home environment of lower-class families. With social agencies, administrators and social scientists so "intervention conscious" today, the need for basic naturalistic research in the area of mother-child behavior has become more urgent than ever before. At one level there is obviously the scientific interest of knowing what the child's early language environment is like, since its quality seems to be so importantly related to so many aspects of the child's later verbal and intellectual development. At another level, however, valid, descriptive data in this area becomes doubly important because of the urgency of its practical implications. As so many enrichment and intervention programs are pushed further and further down the age scale and teachers and researchers are now beginning to consider the possibility of "home intervention" in the first few years of the child's life, the need becomes crucial for basic, descriptive data to be available to inform equally those who would and those who would not advocate psychological intervention into the life-style of a particular subculture. The research that was undertaken in the present study was aimed at providing reliable empirical evidence about early language learning environments -- evidence that might both question the premises of ill-conceived intervention programs and provide a sound data-basis for responsible social and educational planning. Ultimately we would hope that the results from this research might be applied to the construction of language education programmes for disadvantaged mothers via parent-child centres, for instance, as well as to the development of special training programmes at the pre-school level.

Rationale and Objectives of the Home Observation Study

Study I of the Psycholinguistics Project has attempted to study the communication patterns between mother and child within a developmental framework i.e., the language interaction has been observed not in isolation but in the context of its relation to the growth and development of communication skills in the young child. Dell Hymes (in press) expresses a similar notion in the perspective of a general theory of communicative competence:

> The acquisition of competency for use, indeed, can be stated in the same terms as acquisition of competence for grammar. Within the developmental matrix in which knowledge of the sentences of a language is acquired, children also acquire knowledge of a set of ways in which sentences are used. From a finite experience of speech acts and their interdependence with sociocultural features they develop a general theory of the speaking appropriate in their community, which they employ, like other forms of tacit cultural knowledge (competence) in conducting and interpreting social life.

Due to the recent formulations of transformational grammar in linguistics and the spreading influence of Chomsky's theory of language acquisition (e.g., Chomsky 1968) many psychologists have begun to support the view that acquisition of basic linguistic competence in one's language is to a certain extent predetermined by the operation of certain universal, innate mental processes with which all children are endowed. If this is the case, then the picture of linguistic competence painted by Chomsky is really quite optimistic for every child, regardless of race, creed, class or color. But what of the role of environmental factors in this process, especially the kind of language models the child is exposed to? This question is still controversial

(McCaffrey 1969) but it still seems reasonable to assume that although any kind of domestic language environment might do when it comes to acquiring the basic fundamentals of the language, variations in certain characteristics of the environment may differentially affect the rate and quality of a child's language development. What we are talking about then is not an absolute question of whether a child achieves basic mastery of his language or not; rather the issue is a more relative and complex one viz., how fast and how far his ability, in the most general sense, will develop, given the contingencies of the environment that nurtured his competence. Approaching the problem in this way, Study I has used naturalistic observation techniques to attempt to identify those variables in parent-child language interaction which may have positive or negative implications for the child's later verbal development. A similar research interest in influential "antecedents" in the child's linguistic environment has been expressed by Cazden (1965, Friedlander (1970), Slobin (1968), and Brown and his co-workers (1970).

Our basic concern overall, therefore, has been to conduct an open-ended study addressed to the question of the nature and quality of the linguistic stimulation offered to the child, in different homes, between the ages of 2 and 4 years, that crucially formative period of language development. What are the characteristic patterns of language modelling and exchange within families? How do these patterns differ (if at all) across families in the different subcultures of society? In summary, our study of mother-child language interaction has had essentially the following basic objectives:

a) to sample a representative cross-section of urban and suburban families and to devise a methodology for the observation and recording of the verbal interaction within these families;

b) to construct measures that would describe systematically both the structural or grammatical aspects and the pragmatic or functional aspects of a mother's speech to her child in the home;

c) to compare across homes the similarities and differences in these forms of language usage;

d) to describe the various patterns of verbal interaction between mother and child.

There is one, additional long-term aim not realisable this past year due to the young age of the focal children in Study I. Once an adequate description has been obtained of the language environments of the focal children in the domestic sample, we would also like to study the correlation between these domestic antecedents of the development of communicative competence and the measurement of that competence by testing the focal children's communication skills with the special battery of tests developed in Study II for the 4 - 6 age range.

To date, we have completed the first objective above and made some progress in realising the other aims. Due to the lengthy process of data collection and reduction we have only been able to scratch the surface of the large amount of data with our structural and functional analyses of the verbal interaction. We have worked with a small, primary sample of eight families, but have collected a large amount of data on each family. Since this is original, basic, naturalistic research we have preferred to adopt this intensive, small-sample approach in these early stages because we feel, like Dukes (1965), that problem-centered research on small samples may "by clarifying questions, defining variables, and indicating approaches, make substantial contributions to the study of behavior." Our primary objectives in this study have this kind of 'clarifying-defining-indicating' relation to future research in this area.

The Study I Sample

The main source of an experimental pool of possible families was the sample of mothers participating in the Maternal-Infant Health Study (MIH) of The Children's Hospital in Boston. Children's Hospital is one of the 14 institutions throughout the United States which is participating in the National Collaborative Study of Infancy and Childhood. The work of this study is coordinated at the Perinatal Research Branch (PRB) of the National Institute of Neurological Diseases and Blindness, NIH, Bethesda (md.) (for complete details on the patient population see Myrianthopoulos and French, 1968).

The Boston segment of this PRB population in the MIH study now comprises about 11,000 families in whom a focal child has been followed pre-, and post-natally up to at least his seventh year. For the purposes of our own study this MIH population seemed like an excellent potential source of families in which to observe mother-child interaction -- families whose medical and psychological data could valuably be coordinated and correlated with our own psycholinguistic studies. Even more useful for our sampling purposes was the fact that the MIH population is categorized socioeconomically by means of a "PRB index."

This index has been adapted from a technique developed by the U.S. Bureau of the Census which combines scores for education, occupation, and family income to derive a composite, numerical, socioeconomic index for each family. This average PRB score is based on the education, income and occupation of the head of the household, usually the husband wherever possible, but if not, then the mother. The PRB socioeconomic index runs from 0 (Low S.E.) to 100 (High S.E.).

With this kind of socioeconomic index available we were able to begin selecting a large pool of "possibles" out of the Boston NIH sample of families, characterized by Race and Socioeconomic Status (S.E.S.) in order to obtain four groups of subjects -- Lo Black, Lo White, Hi Black and Hi White. In other words we used the PRB index to dichotomise our potential sample of families into those at the lower end of the scale who were more likely to be "less advantaged" and those at the upper end who were likely to be "more advantaged."

Using the coordinated population data available in the computerised records at NIH, we were able to select, on paper, nearly 100 "possible" Boston families on the basis of the following set of selections and matching criteria:

Mother

(a) Age

(b) Race

(c) No. of children born prior to focal child

(d) Years of education

(e) PRB Index

Father

(a) Occupation

(b) Race

(c) Income Level

(d) Years of Education

(e) PRB Index

Focal Child

(a) Date of Birth (child had to be between 2 and 4 years of age at approximately the time of our sampling)

(b) Race

(c) Sex

(d) Birth Weight

(e) Bayley Motor and Mental Abilities Scores at 8 Mos. of Age

(f) 4 year I.Q. Scores (where available)

Housing Density -- i.e., No. of people per room in house

To provide an example of what these variables look like in individual cases, a profile of four typical families is illustrated in Table I - 1.

We next attempted to select from our group of "possibles" a small sample of families for each of our four Race x S.E.S. groups, who could be matched as closely as possible on a limited set of criteria. This proved to be very difficult.

Thanks to the PRB Index we already had our sample ranked over the whole socioeconomic scale from low to high. We now further reduced the number of potential subjects in each of our four groups by designating as "Low S.E.S." only those families whose PRB scores fell into the range 10 through 30 , and as "High S.E.S." those whose scores ran from 70 through 90. Once a sub-sample meeting these criteria were selected, we next attempted to match families both within and across the four groups (Lo Black, Lo White, Hi Black, Hi White) as follows. Across all groups we wanted to have the age of the mother, the age of the focal child, the number of siblings in the house, and the "intactness" (father present/absent) of the home as comparable as possible. Specifically, we would have liked to have had all the mothers between 20 and 30 years of age, all the children under 4 years of age at the date of our initial entry into the home, as few siblings as possible (to make observation of mother-focal child interaction at all feasible with a minimum of distraction), and finally, in an attempt to achieve as constant a domestic language environment (i.e., a speaking mother and father in the home) as possible across all families, we would have liked, ideally, to work with only intact families.

As far as within-group matching is concerned, we also tried to equate number of years of mother's education within each of the low and the high groups separately. Since we were studying the role of the mother as a language model it seemed important that number of years spent in school should not be a source of variance within one of our socioeconomic groups (though it most likely could be one of the factors contributing to a difference between the groups).

Ideally, in research of this sort, the optimal sample for the study of mother-child verbal interaction should comprise intact families with only one focal child and no siblings, and where the major, uncontrolled difference between the groups of families would be their "advantaged" or "disadvantaged" status. Such a set of conditions would maximise the chances of attributing any differences found between High and Low families directly to the specified set of circumstances that are involved in the definition of "advantagedness". Moreover, with such an optimal sample, one would know that the father-mother-child triangle was a psycholinguistic "fact" across all the experimental families, and with no other distracting siblings in the home, observation of mother-child interaction would not only be practical and unhindered, but, from a linguistic point of view, the mother would be free to communicate to her only child as much as she wanted to or not. Variations in the quantity and quality of observed linguistic input to the child might then feasibly be regarded more as a primary function of the mother-as-model than of extraneous other factors in the home.

So much for the ideal sampling situation. Unfortunately, objectively elegant research designs frequently founder on the hard facts of reality and in our attempts to match our sample of families as optimally as possible, we soon discovered those facts to be, quite literally, the facts of life. The amount of discrepancy between the "life circumstances" of the Low and High S.E.S. families in our potential sample was extensive enough to make even the simplest kind of match-up of families across groups frequently impossible. In addition, the diversity of circumstances across families within our low socioeconomic group made comparisons very difficult. These sampling problems made it clear to us that any research conceptions of a homogeneous poverty sector in society are patently false. Our experience corroborates the view of Boger and Ambron (1969) that:

> The disadvantaged are a heterogeneous group of economically deprived children, not a homogeneous group as our programs too often assume.

By applying the matching criteria described above, we eliminated from consideration about two-fifths of the original sample of almost 100 families. We next went to the individual MIH files in Boston for each of the 60 or so remaining families to bring their biographies up to date. The updated information we obtained on these families revealed enough problem circumstances (family moved away or borken up, or neurological, psychiatric, psychological, or speech and-hearing problems) across all groups to prevent all but 20 of them from being suitable experimental subjects. These 20 families comprised 3 LoBlack, 4 LoWhite, 4 HiBlack, and 9 HiWhite.[2] Most of the twenty families were intact, and the mother was usually home with the child at least part of the day so that observation of their interaction was feasible.

These twenty families were next contacted by letter and by telephone, and eventually we obtained eight families who agreed to participate in the study and who could be matched on the variables described earlier. This final experimental sample comprised two HiBlack, two HiWhite, two LoBlack and two LoWhite families. The characteristics of these families are described in Table I-2. The categorisation of families into "Hi" and "Lo" is based on the PRB index of socioeconomic status described above. The black and white families at the upper end of the scale are in the 80-100 range of the PRB scores, while the less advantaged families at the lower end of the socioeconomic scale have scores between 10 and 40. All the mothers in the sample were aged from 22 to 31, and the focal children were all between 3 and 4 years. Unfortunately, our sampling problems were still not over at this point. When our Observers began their initial contact visits to each of the eight families, the two LoBlack families in the sample moved away from the city and had to be replaced by two comparable families. The latter were not in this case members of the NIH population so there are fewer statistics on them. With reference to the descriptive variable in Table I-2, neither of the replacement families was intact, both mothers were on Welfare and the focal child in each home was between 2 and 4 years of age.[3] Each family was paid for participating in the study.[4]

Observation and Recording Procedures during the Home Visits

a) Recording

Before working with our experimental sample of eight families, we spent some time pretesting a variety of recording techniques. We visited about half a dozen families (arbitrarily selected) in the Cambridge area to experiment with regular tape-recorders, with lapel microphones and telemetric transmission, with "alarm-clock" recorders, and with recordings plus or minus a live Observer. For a number of technical and experimental reasons we finally adopted the simplest procedure of using an on-the-spot Observer equipped with a lightweight, battery-operated, portable, transistorised recorder and a high-powered microphone. During a typical visit to one of the eight experimental families, the Observer would position herself and the recorder unobtrusively to monitor the ongoing interaction in the home. By operating the volume controls, and strategically moving the mike from time to time, she was usually able to record accurately conversations at some distance from herself, without needing to move. Whenever necessary to follow an interaction to a more distant part of the house, the Observer could easily take the recorder and herself to another location. More often than not, the Observer would generally remain in one spot throughout an entire visit and successfully capture on tape all the verbal interaction between mother and child.

b) Timetable of Visits and Recording Schedule

Each family was visited for one hour per week over a six-months period (Jan. - June, 1970).[5] The first two or three visits were used mainly for warm-up and familiarisation purposes to help the family and the Observer get to know each other. After these initial visits, each family was visited regularly and weekly until 12 or more sessions had been recorded. Each weekly visit occurred during one of four standard observation periods -- 9 a.m., 11 a.m., 1 p.m., 3 p.m. These time slots were worked out to be the most convenient for all the families, and they also afforded us the opportunity to watch a representative variety of domestic activities that included mealtimes and play-times. Our experimental schedule required that, for each home, a minimum of two visits be made (on different days in different weeks) at each of these four time periods. This meant that, at the very least, each family would provide us with a basic record of 8 hours worth of observations representing a cross-section of daily domestic activities.

c) Observations

Two trained female Observers visited all the families on a weekly basis. At periodic intervals each Observer would work with one of the other Observer's group of families for reliability checks. In addition to tape-recording the weekly visits, the Observer made running narrative descriptive notes about the non-verbal context of the mother-child interaction, while she sat in the home. These notes were invaluable adjuncts to the tapes, for they let us look at the whole matrix in which the language exchange was embedded, and on which the full meaning of the verbal interaction so often depended. The Observer's records provided comments on changes in the physical environment of the home (T.V. being turned on or off, etc.), or in the social composition of the home (arrival/departure of playmates, adult visitors, etc.). Most important of all, these running records also contained the Observer's minute by minute impressions of the emotional background and affective tone of the whole verbal interplay between mother and child. By making these running records of a session, therefore, the Observer in a very real sense was actively 'scoring' the interaction as it occurred. The written descriptions of the interactions that were compiled from these notes of the Observers proved to be an invaluable key to the proper understanding of the tape transcripts.

In addition to the basic data provided by the tapes and the Observer's notes, we also used some Interview and Rating Schedules in the Study. The Interview schedules were administered by the Observer to a mother during one of the early visits to the home. Some examples of the kind of question asked are provided in Appendix A. One set of questions inquired into caretaking and discipline practices in the home. Further questions provided information about the level of literacy in the family, about the child's language skills and play preferences, and so on.

After each visit to a home, and also at the end of the Study, the Observers also rated the mother's and child's behaviour separately on a number of variables, e.g., the mother's mood on a particular day, her emotional involvement with child; the child's sociability, activity level, etc. Examples of these rating schedules can also be found in Appendix A.

The Families' Attitudes towards the Home Visits

Despite the initial artificiality of having a live Observer stationed in their homes one hour a week, all the families gradually became accustomed to the visits over the months. During the latter part of the Study, most of the mothers were treating the observations as part of their normal routine, although all mothers differed in the extent to which they were relaxed and natural, or self-conscious during a session. All the mothers eventually came to regard the Observer as a friend and looked forward to her visits. The generous hospitality encountered in all of the homes sometimes made it difficult for the assistant to remain in the background as a non-participant observer. Mothers who were home all day and rarely had visitors were eager to talk to the Observer and ply her with coffee and cake. In addition some of the children thought that the Observer was a special visitor who had come to see them, and it required a number of visits to persuade the child that the Observer wasn't there just to talk and play with him. In general as the sessions progressed, it became easier for the Observer to encourage the family to return to its normal routine after her entry and for her to withdraw into the background. No attempt was ever made to interfere with the natural environment of the home as the Observer encountered it once she walked in the door (not even if a very loud T.V. rendered a whole taping session unintelligible, as happened on one or two occasions).

Overall, the naturalness of the observation situation improved with time. By the time the later visits to a home were taped, the Observer's weekly arrival in the homes created relatively little disruption in the domestic routine, and the mothers had learned to reserve their socialising until after the hour's taping had finished.

Family Profiles

After the final visits to the homes, the Observers summarised their impressions of some of the more salient characteristics of each family. The following profiles are based on the Observers' notes.[6] The family names are fictitious; all the "Mac's" are low on the socioeconomic scale, while all the "Fitz's" have high PRB index scores.

MacTavish

LoWhite family. 3-year-old daughter Ln. is focal child. Younger sister Ll. is 16 months younger. Mrs. MacTavish in late twenties, separated from her husband. Observer notes that Mrs. MacTavish seemed very lonely and depressed during earlier visits, but towards end of Study seemed a bit stronger and more able to cope. Whole family looked forward to Observer's visits. Mrs. MacTavish has no friends, and her children have few friends. As a consequence there is little outside contact with the exception of Mrs. MacTivish's mother. Focal child Ln. seemed to Observer to be intimidated by younger sister, who is the sturdier and more aggressive of the two. Mrs. MacTavish reads many popular articles concerning child development and is very conscious about being a good mother. On many occasions she would ask Observer (herself married with a family) for her opinions on how she would handle specific situations.

The mother actively engages her children in conversation. Her speech is typically short, quickly spoken sentences ending with "huh". The children tend to end their sentences likewise. Mrs. MacTavish also tends to imitate her daughters' immature speech, and this in turn tends to inhibit their speaking.

MacPherson

LoWhite family. Mother in late twenties, divorced from first husband ("in and out of jail") and is remarried. Focal child is 3-year-old girl, M, who has two brothers, A. younger and T. older. Mother reports that older son has a "mental problem". She goes to the local Mental Health Clinic once a week with 6 other mothers "who tell their problems with different children...."

Mrs. MacPherson is quite open and friendly and seemed to enjoy the Observer's visits, as she felt she was "helping" with research. Initially she was self-conscious of the tape recorder and would whisper and use sign language, but later on she was much more natural. Observer felt that mother preferred her daughter and sensed that she had difficulties in her relations with her sons, especially the elder.

The theme of "destruction" was very prevalent in Mrs. MacPherson's communications with her children. She made a lot of remarks like "he'll kill you", or "be careful or you'll smash your head." There is a lot of close, physical contact between the mother and the two younger children who are at home all day. The mother attempts to be playful in the body contact, but at times it seems to be quite rough and painful to the children. Mrs. MacPherson can be quite harsh and coarse at times, but at other times she derives a great deal of pride from having her children neatly-dressed and well-behaved on outings. Mrs. MacPherson and her sisters have changed paediatricians in favour of one with whom she feels freer in talking about the children.

The Observer felt that the focal child's language superficially seemed to be underdeveloped for her age. M. did not seem to be able to entertain herself constructively for long periods of time. She and her young brother did a lot of aimless running around, whining and screaming. The Observer also felt that Mrs. MacPherson's use of grammar could be improved and that her range of topics of conversation was limited.

MacDuff

LoBlack family. Mother is on welfare, and lives in a Housing Project. Recently divorced from her husband, she lives with her son E.J. (focal child), 3 years old, 4-year-old daughter S., and a new baby daughter, C. Mrs. MacDuff is an energetic woman who is actively involved in a local community nursery school. Although she has a 4-week-old baby, she is ambitiously contemplating going back to school full time in the fall to become a social worker. She says she is flexible enough to manage all these demands on her time, but the Observer found her instead to be quite a controlling woman. She is warm in her relationships with her children and tries to encourage their independence, but she is also strict about their behaviour and activities indoors. Observer noted inconsistencies between what Mrs. MacDuff professed to be her attitudes towards child-rearing, and how she actually handled the children.

The focal child E.J. is a firendly, easy-going child whose mother describes him as being "very even-tempered".

FitzRoy

HiBlack family. Intact. Father is a professional and also active in politics. Focal child is T., 3-year-old girl, with a younger sister D.

Mrs. FitzRoy is a quiet, well-groomed woman with a very orderly household. Her daughter T. is quiet, well-behaved, and a little overwhelmed by her younger sister who is heavier built and more agressive by temperament. T. and her sister play very well together. They are both quite creative and use much imagination and fantasy in their play. Mrs. FitzRoy encourages them in their play by creating dolls out of yarn and wooden sticks, and by participating in their verbal fantasies. The mother emphasises learning and buys games which teach letters and numbers. The children have many toys, records and books. Mrs. FitzRoy takes them to appropriate children's plays also. She is quite protective of the children and does not allow them to play with the children on the block. Mrs. FitzRoy is very 'teaching conscious' and buys educational toys. The Observer notes that she seems to encourage language games and discourages the focal child T. when she reverts to baby talk.

FitzGerald

HiBlack family. Mother is in late twenties, home is intact, father is college graduate and researcher. There is only one child, R., a 3-year-old boy. Mr. FitzGerald is the father who has shown the most interest in the study and frequently called up (while the Observer was in the home) to see how things were going. Mrs. FitzGerald also showed a good deal of interest in the Observer's personal affairs and seemed eager to make comparisons between families. The focal child R. was the least cooperative child in the Study and his mother had a difficult time controlling him. The mother goes out to work in the evening. The Observer reports that Mrs. FitzGerald copes with her son by doing things for him, by preventing him from doing things, and resorts to physical force when necessary to keep him quiet. She seems to slap the child more than the other families in the Study. The Observer noted that when she was leaving at the end of visits, R. would act up, become very aggressive, active, angry, and his mother would hit him to control him. R. is generally a very active child, and his speech is still somewhat unclear. The Observer feels he craves love and attention from people. He has a number of expensive toys, but is very destructive with them. The mother reported that R. plays all right with other children (the Observer never saw him with other children) but gets angry when he's alone with her. The Observer felt that the mother was suppressing a bit of reciprocal hostility towards her son while the Observer was there. Mrs. FitzGerald said she enjoyed the Observer's visits and the latter felt that she genuinely did. The focal child also sucks his thumb and carries a soft blanket, and it was the Observer's impression that R. really needed companionship and affection. Once when his mother spanked him for calling names he crawled up in her lap and she pushed him off several times. Frequently when R. wanted attention from his mother she would either react negatively or begrudgingly.

FitzHughes

HiWhite family. Mother in late twenties, college graduate. Father a postdoctoral research scientist. There are two children -- the focal child, a boy R., aged 3, and baby daughter C. Mrs. FitzHughes appears to be a well-organised, well-controlled woman. She is bright, articulate, and encourages her son R. in conversations. R.'s speech is not always understandable, and he rambles quite a bit. He engages in fantasy talk quite a bit in his play, and though his mother encourages this, she was rather self-conscious about participating in it. The Observer reports also that Mrs. FitzHughes seemed to be a very controlling woman, very concerned about cleanliness. This controlling attitude sometimes led her to make unnecessary restrictions on R.'s free play. She tended to have a rather sarcastic and inhibiting attitude towards her son's practice of sucking his thumb and carrying a blanket. She would imitate him if he spoke with his thumb in his mouth. R. talks to himself a lot and does a lot of pretending about being big and grown up. Observer made the general comment that mother generally used her language towards her son both to control and to teach.

FitzGeorge

HiWhite family. Mother in mid-twenties, father a doctoral science student writing thesis. Live in rural area close to his work. Two children, focal child a 3-year-old girl H., and a younger brother R. Observer reports H. to be a very bright, articulate, well-developed and mature child. The parents are very verbal people and both encourage conversation with H. They are very proud of her and her development, and even at times compare the younger brother to her unfavourably. H. has many toys, books, her own phonograph and transistor radio. She is the only child in the Study to attend nursery school, and was sent there because there were so few children near home for her to play with.

Mrs. FitzGeorge readily participates in her daughter's games, and encourages her fantasy play which comprises a large part of H's play. The family is closely knit, the father is home a lot, and plays a large role in the family and is around more often to talk to H. then most of the fathers in the other families. The Observer also noted that Mrs. FitzGeorge also draws her daughter out a lot in conversation and seems to have more open-ended dialogues with her than occurred in the other families in the Study.

Data Processing and Reduction

As was indicated earlier, the data in Study I took the form of tape-recordings of the weekly visits plus written descriptions of the interaction compiled from the Observer's notes. In order to have a visual, scoreable record of the sessions, the tapes were transcribed in a standard format. The business of transcribing over 70 hours of speech was a long arduous process; one hour of taping could take anywhere from 3 to 10 hours to be transcribed depending on the complexity and interpretability of the recorded interaction. In addition to transcriptions there was also the lengthy process of integrating the Observer's notes with the continuous tape record in order to reconstruct the hourly sessions as fully and as accurately as possible.

Eventually, for all families, the running records of the hourly sessions were organised into protocols with three vertical columns for mother-talk, child-talk, and Observer's comments and remarks. Examples of these protocols can be found in Appendix B.[7]

Since all the protocols together contain many thousands of utterances, steps were taken to extract a representative and workable corpus of utterances from this mass of data and to carry out initial data analyses on this sample of verbal interactions. Since the families had become more and more used to the Observers' presence with each visit, the more natural recordings of mother-child dialogue were to be found in the later sessions. For this reason we began to work with a basic "log" of 8 hours worth of recording per family compiled from the last 8 visits (1 hour each) to each home. From the middle of each transcript for these 8 sessions we drew a subsample of 100 consecutive utterances of mother-child talk. (For other precedents in working with a reduced corpus of language data, see Brown 1970, and Plumer 1970.) An "utterance" was very roughly defined as any statement, by a single actor, with a recognizable beginning and end. Utterances could be single words or complete sentences.

For each family, then, we obtained a working corpus of 800 utterances spread across the last 8 visits to the home. For the seven families to be discussed in this report, therefore, the basic data comprise 5600 utterances.

Some Preliminary Findings

By the end of the funding period (June, 1970) not all of the Study I data was at the same stage of processing. Taping in certain homes ran right up until June, and analyses of the data from these families is accordingly less complete. In the short time available for scrutinising all of the interaction records, our initial analyses have eschewed quantification of specific categories, and we have preferred instead, for the purposes of this report, to provide a general overview of the data. Our preliminary survey of the domestic language records has utilised the general impressions provided by the Observers' reports and has followed these up by scanning the data for reliable instances of the language patterns that the Observers have felt to be most characteristic within individual homes.

Our preliminary survey, then, essentially represents a short-term scanning of the terrain. Over the long-term our analyses will have the double aim of (i) arriving at a valid description of the most salient characteristics of the young child's domestic language environment and (ii) uncovering variables and generating hypotheses to guide further study of specific aspects of the mother-child interaction process.

Before turning to the details of our preliminary findings, two further points are worth reiterating here. First, the relation of Study I to Study II should always be kept in mind. We are not looking at mother-child interaction in isolation, for the research is conceived within a developmental framework, i.e., we feel that this basic, observational study is a necessary first step for identifying those critical variables which ultimately affect the child's language development in its most pragmatic sense, viz., as a tool for communication. Secondly, our focus on verbal interaction does not mean neglect of other integral components of the mother-child interaction process. As our discussion above of the observational data should indicate, we are well aware of the necessity to look at the whole non-verbal matrix in which the language exchange is embedded and on which the full meaning of the verbal interaction so often depends.

A. Structural Aspects of the Linguistic Interaction

We were primarily concerned here with looking at the grammatical aspects of the verbal interaction, and especially at the mother as a language model and the quality and variety of her speech input to her child. A grammatical description of this input should be a necessary precursor to establishing any correlation between major variations in maternal speech across families and measured differences in thecommunication skills of children from those families.

There was syntactic variety in the language of all the mothers. All of them also tended to use simpler sentences more often than complex ones, but the proportion of the latter seemed to be relatively greater among the High S.E.S. group of mothers. Part of the reason for the lower production of embedded sentences among LoWhite mothers like MacTavish and MacPherson is the constraints of the communication patterns within these families. Mrs. MacPherson, for example, can produce a variety of grammatical forms under certain circumstances, as her stranscript in Appendix B will illustrate, but that delightful dialogue about "Mummies" is not her usual style. Her predominant communication style (and one that is typical of the poorer families in the Study) is characterised by short, simple sentences or phrases, not always well-formed, and consisting largely of direct commands, instruction or questions. Mrs. MacPherson and Mrs. MacTavish both show a good deal of reliance on stereotyped, stock phrases in their one-line exchanges with their children, a phenomenon encountered much less frequently among our group of High S.E.S. mothers.

The grammatical variety and complexity of mothers' utterances was of course related to the elaborateness of the exchanges that were practiced between mother and child in particular homes. In families where the mother's preference was for one-line dialogues or single question/single answer routines, there was less opportunity for sentence development. We will discuss "dialogue elaboration" more fully in the next section, but we can mention here that Plumer's (1970) distinctions between different kinds of dialogue structures were applicable in our own analyses. In his study of parent-child dialogue strategies, Plumer differentiated two types of dialogue: a "linear", additive sort of dialogue, strung together with a concatenation of short utterances, and a "circular", elaborative dialogue of richer quality. He found that there was a high proportion of circular dialogues in his high verbal ability families, where the adult-child discussion would involve extensions of a basic idea, requests for clarification and increasing specificity of references to the issue. Our preliminary analyses tend to support Plumer's findings to the extent that circular dialogues were much more typical of the High group of families, while there was a greater preponderance of linear dialogues among the Low group. Compare, for instance, the more "circular" dialogue between the HiWhite mother, Mrs. FitzGeorge and her daughter in their transcript in Appendix B and the more linear dialogue in the LoWhite, MacTavish family (also in Appendix B). There werecomparable circumstances in both these families at the time of these recordings. The FitzGeorge girl, H., was 3 years, 9 months at the time, the MacTavish girl, L., was almost 4. Both mothers were playing a game with their daughters (with a younger sibling present in both families): Mrs. FitzGeorge was engaging in some fantasy talk with H. about a "library under water" while playing with building blocks, while Mrs. MacTavish was helping her daughter with a pictureboard puzzle.

Another aspect of the interaction that might be considered as 'structural' is the mother's sensitivity to the child's own use of syntax and her attempts to develop or correct this. Contrary to a claim by Roger Brown (1970) that his three mothers always corrected the truth value of their children's statements but never their grammar, we found a number of instances of grammatical correction among our High S.E.S. group of families. The same kind of attention to the child's syntax was never encountered in the Low group.

Here is an example of Mrs. FitzGerald correcting her son's use of a possessive pronoun in a brief exchange with the Observer about the recording microphone. Note the child's difficulty in incorporating the correction into his own sentence (he was 3 years, 7 months at this point):

Child: Where'd you get that from

Observer: Oh -- from my office

Child: From my office for the microphone

Mother: From her office

Child: My -- this is your -- my office for the microphone? Who's he comes from? The microphone? Where'd you come from?

A little later on he imitated a correction more successfully, while using the microphone to act as one of his favourite T.V. stars:

Child: ...oh dis is my dougwas, right?

Mother: Who?

Child: Ah, mi douglas.

Mother: Mike Douglas?

Child: Mike Douglas, right.

Another example comes from Mrs. FitzGeorge correcting her daughter's verb tense usage while they both play "shop":

Mother: What are you buying?

Child: I buy a knife.

Mother: You bought a knife. You didn't buy the knife.

Child: I bought the knife and I got a doll for my mother.

--- and later on, during some make-believe play about H. giving her mother Poison Ivy, Mrs. FitzGeorge corrects pronoun usage:

Mother: Oh, please don't come over here with your Poison Ivy.

Child: I'll try to get it off me.

Mother: You'll try and get it off *you*.

Child: Hold on, hold on.

Mother: O.K., I'm holding on.

Child: All right, I got it off.

Mother: You got it off.

Our High S.E.S. mothers were also more likely to go in for more obvious tuitional modelling of sentence construction. Witness this dialogue between Mrs. FitzRoy (HiBlack) and her daughters T. (aged almost 4 years) and D. (aged 2 years, 10 months). Notice how the younger child D. mentions 3 separate attributes about her shoes in 3 separate utterances. Her mother then combines all three notions in one sentence, and D. follows this up by producing a single sentence dealing with two attributes.

Focal Child T.: You know -- you know, my shoes are navy blue. D. doesn't. D. Doesn't know that. She thinks they're black.
Child D.: Mine are -- my shoes are navy blue, too.
Mother: The ones like T. has.
Child D.: The small ones are too tight. So she wears red.
Mother: They're navy blue, and they're too tight, so she wears red.
Child D.: She wears *red* and blue.

Mrs. FitzRoy also uses didactic imitation to teach her daughter a new word, using the child's own sentence structure:

Child: Sometimes Ernie (of Sesame Street) cry.
Mother: Sometimes Ernie cried?
Child: Yeah -- and wh- -- when -- when his ice cubes are gone.
Mother: When his ice cubes are melted, huh?
Child: Yeah --

An analysis of strictly structural aspects of the language of maternal models takes us only so far, however, in our study of the role of parent-child interaction in verbal development. Indeed, some psycholinguists have recently concluded that strictly grammatical aspects of linguistic stimulation how very little variation across cultures, let alone across families within a culture. In a recent review of a limited number of cross-cultural studies, Slobin (1968) suggested that there is a universality of stages and processes of acquisition of linguistic ocmpetence by children. Data from his co-workers indicated to Slobin that mothers around the world all talk to their children in a similar, simplified manner. If assumptions like these about universal processes of grammar acquisition (which are environment-free) prove to be correct, then we obviously have to look at other factors besides structural ones to account for differences in language performance between children. More account must be taken of the interaction between structural and functional processes, and we have emphasised, in this study, pragmatic as well as syntactic aspects of language stimulation in the home. As Slobin (1968) remarks:

> Each child is equipped with a basic strictly linguistic competence which can be differentially shaped to carry out a variety of sociolinguistic functions.

Cazden (1968) shares this view when she states: "Basic grammatical structures seem to be learned despite differences in the child's linguistic environment, while how children use language to express ideas may be more vulnerable to environmental variation."

Of the many co-determining influences involved in the "shaping" process Slobin refers to, not the least of them is the way in which the parent models language usage as well as the language itself. Structural processes in language acquisition may very well have innate components, but children have to learn the functions of language through a process of social interaction, and it is this half of the language development process that is more at the mercy of environmental opportunity.

Some of these functional properties of the interaction are discussed below.

B. Pragmatic Aspects of the Linguistic Interaction

The primary focus of our analyses here was on the function of language in the child's domestic environment. The pragmatic aspects of the language system are what Ragnar Rommetveit (1968, p. 11) has called the 'conditions and effects of usage'. We have interpreted this broadly to include the Dialogue Options the mother offers (or withholds) in her speech and the Variety of Functions for which she primarily uses language. While there were a number of similarities across all families in the mother's use of syntax, a comparison of the purposes for which mothers used verbal communication with their children revealed striking differences between the two S.E.S. groups. In most of the instances we studied, the HiBlack and HiWhite mothers used a greater functional variety of communications more frequently, more intensively and, to judge by their children's responses, more effectively than their low S.E.S. counterparts. Some of our major findings with regard to group differences in parental modeling of language usage are as follows:

(i) Addressing the Child

A noticeable difference between the communication styles of the two groups of mothers was in their manner of addressing their children. Calling someone by name at the start of a conversation is one of the best ways of getting their attention. It is a means of testing the communication channel to see if it is open, and if a message can be transmitted effectively. Between mother and child, special forms of address also help to enhance the child's sense of identity by making him the focus of attention. The High group of mothers in Study I used many more prefatory remarks ("Why don't we ...","Let's...", "How about...", etc.) in initiating exchanges with their children, and were more likely to call the child by name during a conversation than the Low group of mothers. The verbal forms used for addressing a child really reflect an attitude towards the child's needs and capabilities. We can highlight the contrasting styles of address used by high and low mothers with the following remarks recorded under similar circumstances. Both these excerpts are taken from the beginning of a visit where the children in both homes had expressed curiosity about the tape recorder just after the Observer arrived. Here is Mrs. FitzHughes (HiWhite) addressing her son (3 years, 10 months) after he has spoken with the Observer about the recorder.

Mother: Now you'll know the next time, won't you?

Contrast this with Mrs. MacPherson's (LoWhite) comments to her daughter (4 years) who had expressed a similar interest in the recorder:

Mother: Get outta here! If you touch that (the recorder) she'll kill you. You want her to kill you?

(The Observer's general impressions about the frequent references to violence in Mrs. MacPherson's language are borne out frequently throughout the transcripts. She communicates with her children in very harsh, direct, adult terms. She can be cruelly threatening at times and her discussion of topics that the children are apprehensive about (e.g. going to the doctor for an injection) is less than delicate, to put it mildly).

One of the major differences in forms of address to the children in both of our socioeconomic groups is that mothers like Mrs. FitzHughes seem to have a much wider focus of attention when talking to their children than does someone like Mrs. MacPherson. Mrs. FitzHughes is more patently aware of the necessity to teach the child as well as control him. Mrs. MacPherson, on the other hand, is more likely to use language as an immediate response to an immediate event, and her exchanges with her children are replete with unadorned imperatives, commands and directions that do little more than control the child's behaviour and half the time do not invite verbal reply. The language of Mrs. FitzHughes, however, operates in a much wider context: she is constantly "dialoguing" with her son and exposing him to a wider frame of reference with remarks about future events that he must plan for or reminding him about past events with which he is familiar. We will return to this theme again in the discussions below.

(ii) Dialogue Options, Elaborations and Initiations

We mentioned above how the MacPherson transcript in Appendix B represented that mother at her dialoguing best. Unfortunately, "circular" dialogues like that conversation about "Mummies" were not too frequent in Mrs. MacPherson's language. By restricting herself (whatever the cause and effect) to "linear" dialogues and "one-liners" much of the time, Mrs. MacPherson (and Mrs. MacTavish similarly) restricts the dialogue options in the family interaction. And with fewer options for verbalising, there are fewer opportunities for dialogue elaboration. These factors of option and elaboration further interact with the frequency with which dialogues are initiated on either side, and the workings of all three of these factors together create a complex pattern of exchange within and between families. The most general statement that can be made about group differences in dialogue behaviour is that the mothers in the professional families more frequently and more consistently initiated open-ended dialogues with their children than did the mothers in the low socioeconomic group. Because of this open-endedness, the children in the High group had more options for pursuing the conversation. Most strikingly of all, the overall amount and quality of dialogue elaboration by the High group of mothers far surpassed any that was demonstrated by the Low group of mothers.

We should point out here that these comparisons all involved behaviours that were generally present in all of the families observed, and single instances of elaborations, initiations, etc. could be cited for any individual family. The frequency patterns diverged along socioeconomic lines, however, and, as with so much of the interaction data in Study I, these patterns usually existed in relatively greater or lesser degrees at one or other end of the continuum.

Mothers in the Low group, like Mrs. MacDuff, Mrs. MacTavish and Mrs. MacPherson were more likely to ignore dialogue initiations by their children, or to respond to them with a remark that did not "extend" the conversation, to use Plumer's terminology (Plumer 1970).

Here, for example, is an exchange in the MacTavish home that illustrates an imaginative initiation of a new topic of conversation by the focal daughter, but the mother lets the excellent opportunity for elaboration go by:

Focal Child: Yesterday I saw a doggie and girl -- yesterday -- I saw a talking ball.

Younger Sister: Talking ball (laughs).

Mother: A talking ball, hum? (conversation then drifts into another topic.)

Compare this with the transcript of the FitzRoy family in Appendix B. The interaction in this typical episode is full of reciprocal initiations by mother and child, back and forth questions and answers, and lots of elaboration by the mother. The FitzGeorge transcript in Appendix B likewise provides examples of initiations by the child which the mother responds to and extends so that a "circular" dialogue evolves about the "library under water." Both the FitzRoy and FitzGeorge examples here are high on teaching and intellectual content. Compare these with the following excerpt from the LoWhite MacPherson home where personalities and emotions seem to get in the way of any didactic possibilities in the dialogue. Mother, focal daughter, and younger brother are present. The latter has begun to chew on his older brother's toy soldiers:

Focal Child: He's biting 'em.

Mother: Look at your teeth. Look at your teeth. Let me see.

Younger Brother: Mo cah.

Mother: Ohhh, Tommy (older brother) will kill you.

Focal Child: Tommy kill you if you take that hand off.

Mother: When Tommy comes home he'll kill you.

Focal Child: Don't tell.

Mother: I will tell on him.

Focal Child: Why?

Mother: Because he shouldn't be doing that. See. He bit his hand right off.

Focal Child: I told him don't bit (?) his hand off.

Mother: Well, he did, you better tell him again.

Younger Brother: Ugh, ugh.

Focal Child: His teeth is all rotten.

Younger Brother: Ugh, my tooth.

Mother: His teeth is all rotten? No, his teeth ain't rotten.

(Note also the interesting borrowing of syntax and vocabulary between mother and child here).

A counterpart of dialogue elaboration is the quality of the mother's encodings, descriptions and instructions to her child during play. Comparisons of mother-child interaction in similar situations for High vs. Low families suggested that High mothers wasted fewer opportunities to draw the child's attention in a linguistically sophisticated way to aspects of the play situation that he might not have perceived or considered. On the other hand, impoverished directions or instructions were rather typical of the play interaction in a LoWhite family like Mrs. MacTavish. Here is Mrs. MacTavish playing with a picture-board puzzle with her two daughters:

Mother: I see your piece.
Focal Child: Where?
Mother: Right in the middle of the pile.
Focal Child: I can't.
Mother: Then you're not looking.
Focal Child: I, ah.
Mother: Look all around.
Focal Child: I can -- uh-oh!
Mother: No. I still see.
Focal Child: Uh-oh! --
Mother: She found it for ya, huh?
Focal Child: Yeah. On the beak -- that's bunny --

Mrs. MacTavish's rather restricted contributions here are somewhat typical of the Low group of mothers whose discourse often seems more bound than that of the High mothers to the behavioural setting in which their acts of speech occur. Whatever potential (or even talent) for embellishment these mothers may possess, it is exercised all too rarely in their day-to-day domestic discourse with their children.

However, beyond the basic requirement of constructing utterances that are grammatical, mothers *do* have *options* about their *style* of communication to their children and about the ways in which they can go beyond the information provided by the environment to provide linguistic elaboration of a message to a child. As Rommetveit remarks: "Conversations may deal with the very same objects and be oriented toward precisely the same task, but nevertheless differ markedly with respect to emancipation from the immediate perceptual-behavioural setting of those objects and that task." (1968, p. 194).

We can illustrate this viewpoint by contrasting the MacTavish episode above with the language of Mrs. FitzGeorge (HiWhite) in a comparable play situation with her daughter H., playing with blocks. Notice how the mother goes beyond the basic minimum necessary for maintaining the exchange and provides questions of her own, introduces new perspectives and embellishes the dialogue with rational explanations:

Child: ...making this sled.

Mother: Sled?

Child: No. Not a sled. Now I'm making a see-saw.

Mother: A see-saw.

Child: A sli-- no -- a slide.

Mother: A slide that's a very good slide. Here's a see-saw, look.

Child: Oh.

Mother: That's all right. You can use it for a slide too.
The slide's very good.
Oh, that's a good one. How can you make the children sit on that? Well, the children sit.
Will they fit?

Child: Yeh.

Mother: Do we want to take off her dress? (referring to a doll). Excuse me, you take it off for me.

Child: Why?

Mother: 'Cause her dress gets in the way. It's a gown and it's very long. She won't be able to sit on the see-saw with such a long dress.

Child: She's going to be on the seesaw because it's going to be summertime and she's going to be in the water on the see-saw.

Mother: Oh, very good.

A final example to be contrasted with the MacTavish play episode just above comes from a lunch-time exchange in the home of Mrs. FitzHughes (HiWhite) who never misses a chance to model elaborate encodings for her son:

Mother: Would you like to put this (cheese) back in the refrigerator for me?

Child: What?

Mother: Do you know where the cheese goes?

Child: Unh unh.

Mother: It's that special lift-up drawer. See if you can find it. (Noises) See? Lift it up. Right there below the eggs.

Child: What?

Mother: Below the eggs. All right. Now next to the butter -- and the one next to it is for the cheese. Put it right in. Thank you.

Child: All wight, thanks much.

(iii) Tuitional or Didactic Dialogues.

At the start of this section on pragmatic aspects of the mother-child interaction we discussed differences between our two socioeconomic groups in the mothers' basic attitudes and styles for addressing their children. One constant and very obvious manifestation of the different orientations of the two groups was the amount of "teaching" that the High group of mothers managed to pack into their dialogues with their children.

Didactic dialogues were very characteristic of the High but not of the Low mothers. A good way to illustrate this difference is to show how the different mothers coped with the common problem of controlling their children's behaviour. All of the mothers, regardless of S.E.S. status, had behaviour problems with their children at one time or another during our visits (some mothers like FitzGerald seemed to have them all the time). The verbal reaction to this problem, and the communication style used, however, were quite different between the two groups. The low S.E.S. group of mothers seemed to exercise verbal control of their children's behaviour according to some principle of economy: commands and directions were issued as briefly as possible to achieve the required effect. No more was said than necessary to change the child's behaviour. This may be very efficient in a practical sense, but from a linguistic point of view it is a fairly primitive use of language. Faced with similar problems of behaviour control, the High group of mothers were more likely to linguistically elaborate their directions to the child with the double effect of both controlling his behaviour and teaching him about something. All the HiBlack and HiWhite mothers did this, and the best examples come from Mrs. FitzHughes (HiWhite) who was more consciously didactic in her dialogues than any of the rest. The excerpt from the FitzHughes family in Appendix B shows the kind of rational explanations that she constantly indulged in while monitoring or directing her son's behaviour. The simple act of getting him to wash his hands properly becomes a verbal exercise in planning ahead and learning how to do things in sequence. Similar situations in the MacPherson (LoWhite) home were more likely to elicit loud expletives, curt commands, strong prohibitions or threats from the mother. Only infrequently did she go beyond the immediate situation and use verbal elaboration to teach about other facets of the situation that the child had ignored or was unaware of. Mrs. MacTavish (LoWhite) often used sarcasm or biting comment to control her daughters' behaviour or to criticise their performance. Also, as the Observer had reported, the transcripts provide examples of Mrs. MacTavish imitating and mocking her daughter's speech whenever she considered it babyish or mispronounced. The net effect of these tactics was to inhibit dialogue rather than to encourage it. Mrs. FitzHughes (and Mrs. FitzGerald and FitzRoy too) doesn't like to hear her 3 years, 10 months son revert to baby talk either, but even when scolding him for this her remarks remain a model of articulateness and rationality:

Child:	....my kuka windmill.
Mrs. FitzHughes:	R., I don't want to hear talking like that.
Child:	My kuka windmill.
Mrs. FitzHughes:	R., I don't want to hear any talking like that or you'll have to sit on the chair.

The FitzHughes dialogues generally constitute a high-powered version of what is linguistically typical among the High group of mothers. She is always conscious of her obligation to use language to teach as well as to control and her verbal exchanges with her son are always full of reasons, causes and effects, explanations, etc. We remarked in an earlier section how the mother-child dialogues in the High group seemed to operate within a much wider frame of reference such that the child was always being exposed to verbal reminders about future events to plan for or about past events with which he was familiar. Here, for example, is Mrs. FitzHughes elaborately explaining a play arrangement to her son (3 years, 10 months):

> Mother: Listen. Do you want me to call Chris and see if he can come to play? Why don't you gather up some of your toys and take them up -- put some stuff in the big box and take them out in the playroom so Chris will have something to play with if he comes because you can't play in here you know. Kathy will be sleeping, o.k., take the stuff out to the other room, o.k.?

Controlling their children's behaviour was not the only area where the High group of mothers were more likely to practice didactic dialogue. Mrs. FitzRoy, for instance, would test her daughters' reading comprehension when they were going through a storybook together by initiating question/answer exchanges about the story. Mrs. FitzGerald likewise engaged in a lot of question/answer routines with her son about the names of things. In addition, Mrs. FitzRoy is frequently tuitional in her general discourse with her daughters and uses questions to have them remember familiar things. In a typical dialogue about drawing Raggedy Ann (part of which is illustrated in Appendix B) she was very didactic in her handling of the discussion and her questioning forced the children to sustain the dialogue and elaborate on previous answers. This same kind of circular, elaborative dialogue was also frequently found in the conversations between Mrs. FitzGeorge and her daughter.

There seemed to be many fewer instances of didactic dialoguing among the Low group of mothers and this is probably related to the higher incidence of "linear" dialogues in this group and the general infrequency of sustained dialogues of any quality between these mothers and their children. On the whole, mothers like Mrs. MacPherson offer many fewer dialogue options to their children and, as a consequence, very many of the mother-child exchanges in the MacPherson home lack elaborative content. With fewer options, there are fewer opportunities to use language to "teach about", and one result of this is that the child does not hear a variety of syntax being used to develop themes about a single topic. Another way of putting this is to say that the child seems to be getting less mileage out of his linguistic environment.

(iv) Verbal Fantasy.

One observational impression that was also reported was that the Low socioeconomic group of mothers seemed to show relatively little change in their speaking style when addressing adults or their children. We have already commented on some aspects of this in the previous section on "Addressing the Child". We further discovered from the transcript data one other very important correlate of this difference in speaking "attitudes". Not only would the High group of mothers more apparently switch their styles of speaking when addressing adults or children, but, more significantly, they were more likely to enter freely into the child's verbal fantasy play and help him embellish and develop it. The Low mothers, on the other hand, virtually never entered into their child's fantasy talk. These mothers rarely introduced any verbal fantasy into their discourse with the child, and whenever the latter introduced any fantasy elements into his conversations the mother's reaction was usually negative or ignoring. Contrast, for example, Mrs. MacTavish's "talking ball" remark which we discussed above, and the complete participation of Mrs. FitzGeorge in her daughter's make-believe discussion which is excerpted in Appendix B. The reason why the striking differences between the two groups in this area of language behaviour are so important is because of the value of verbal make-believe and fantasy for the child's language development. The child's use of verbal fantasy in our transcripts was usually spontaneous and well-motivated. A mother could enter into it without any difficulty and use it as an excellent exercise in dialoguing about something that interested the child. Participation in the child's make-believe talk was also an excellent teaching device. The best examples of this were provided in the FitzGeorge (HiWhite) home where Mrs. FitzGeorge and her daughter frequently developed lengthy (and linguistically sophisticated) dialogues about make-believe circumstances. In the course of these conversations a great deal of new vocabulary was introduced by the mother and a wide range of temporal and spatial concepts were touched upon. Mrs. FitzGeorge entered into her daughter's verbal fantasy play with great facility. During one of our last visits to her home, she and her husband were sorting through boxes of clothes prior to packing for a trip. The focal child was playing with her dolls in the same room and Mrs. FitzGeorge switched back and forth with great ease between discussing packing details with her husband and participating in her daughter's verbal make-believe about "playing house":

Father: (to Mother) You've got everything done.
Mother: I cleaned out toy boxes yesterday, all the toys that were on the bottom they haven't played with for ages.
Child: Let's play house.
Mother: O.K. Let me see, I have it on the chair in here.
Child: Mommy, this will be for your baby.
Mother: That's lovely.
Child: No, he didn't come to my house yet.
Mother: Oh, is this your house?
Child: No, that's my house. Mommy, don't come in my house until I tell you.
Mother: Why did Daddy put this gigantic bandage on your arm?
Child: Because I got shot by an Indian.
Mother: Shot by an Indian, I should have known by the size of the bandage. Oh, terrible.

There is nothing comparable to this exchange in any of the transcripts of the Low group of families. And it is also not irrelevant to this discussion of the importance of verbal fantasy that, of all the focal children in the study, the FitzGeorge girl was judged by the Observers to have the most developed and sophisticated control of language.

Like Mrs. FitzGeorge, Mrs. FitzRoy (HiBlack) also actively participates in her daughters' make-believe talk and she does it not only for fun but also to teach vocabulary (in one discussion about Cinderella) or to tie in the fantasy talk with drawing or other creative activities. Make-believe talk and play is usually regarded as one of the most characteristic aspects of childhood. When one considers its prevalence in the mother-child dialogues in the High group, and its virtual absence or neglect among the Low families one begins to raise questions about very basic differences in the premises entertained by two such socioeconomic groups about the child "as child" and about his language development needs. We will return to this consideration in the Discussion below.

(v) The Child's Language.

Having spent so much time in the previous sections on a discussion of the nature and quality of the language modelling provided by the mothers in our two groups, the question inevitably arises as to the possible differential effects on the focal child's language of the varieties of maternal language usage discussed above. We can make one brief comment on this here. A perusal of the transcripts of all the families leaves one with the general impression that the linguistic quality of the mothers' language could be ordered roughly as follows: highest quality by FitzGeorge and FitzHughes, followed by FitzRoy, then FitzGerald, then MacTavish and MacDuff, then MacPherson. It might be more than coincidence, therefore, that when the Observers were asked to give a rating of the overall quality of the language of the focal children in the study they produced the following ordering from top to bottom: Girls: FitzGeorge, FitzRoy, MacTavish, MacPherson; Boys: FitzHughes, FitzGerald, MacDuff. Probably the most vivid contrast is between the children at the two extremes of the overall ratings i.e., between the garbled shouting and ill-formed, fragmented and repetitious sentences of the MacPherson girl and the well-formed, varied and sophisticated utterances of FitzGeorge's daughter (4 months younger than MacPherson).

The most noticeable difference between the children in the two groups is in the level of vocabulary they use. Perhaps this isn't too surprising when one witnesses the level of vocabulary to which they are exposed at home. The advanced word usage by the FitzGeorge child must certainly be influenced by the kind of domestic exchange we recorded there:

Father: (to daughter) Do you know what this is?
Child: Buttercup.
Mother: Yes she does.
Father: Yes, it's a small buttercup. Isn't it pretty? See how it's kind of metallic, like portulaca?

The higher level of vocabulary utilised by the High families seemed at times to denote a totally different orientation to the world than that adopted by the Low families. The most remarkable example of this was provided by Mrs. FitzHughes who, when her son discovered a worm in his apple one lunchtime, remarked: "I'll have to get the microscope out."

DISCUSSION

Our preliminary survey of the data has revealed similarities within groups and differences between groups in the nature, variety and quality of the mother-child verbal interaction in the different homes. This report has dealt with the naturalistic, observational data not in terms of fine-grained analyses, which would be premature at this point, but in general, descriptive terms in order to highlight a wide range of differences between our two socioeconomic groups in the kinds of language modelling and language usage practiced in the home -- differences in the manner of addressing the child, in the amount and extent of dialogue elaboration, in the dialogue options provided, in the teaching quality of the dialogues, etc.

These first impressions gleaned from the data will have to be further substantiated or modified by further analyses and study. It should be emphasised here that our discussion of group differences has always been couched in relative terms throughout. The particular communication patterns which we singled out for discussion above were those which we considered

a) to be meaningfully related to the language development of the child,

b) to be present to greater or lesser degrees in both of our socioeconomic groups, and

c) to show systematic differences between the groups in rate, frequency and consistency of their appearance.

We should also remind the reader here that our data come from families at the extremes of the M.I.H. sample of mothers and children. There is no reason to believe that in the population at large there would not be some comparably low socioeconomic families whose mothers would talk to their children in the same manner as most of our High mothers, and vice versa. Nor would we dispute that samples of families drawn from the middle of the distribution might not show the same systematic differences that we have observed with extreme samples. We can only repeat that with a small sample of families who were carefully chosen and matched but who had real physical, geographical and psychological differences, there are recognisably different patterns of verbal interaction at different socio-economic levels.

The explanation for these different language patterns cannot obviously be a purely linguistic one. Our general observations about the pragmatic differences in the mothers' language behaviour lead us to speculate that both of our groups of mothers are operating with different intuitive theories of child psychology. There is enough consistency of pattern within groups to convey the impression that the High group of mothers, on the one hand, are more obviously operating on the assumption that the child is a child, with his own special needs and emotions, and educability; the Low mothers, on the other hand, seem already to be treating their children as little adults who will eventually grow bigger, and no special allowance is made in the verbal interaction for the child's limited and still growing capabilities, still in need of nurturing.

Some support for this view can be found in a recent study by Tulkin and Kagan (1970) on social class differences in mother-child interaction in the first year of life. "One source of class differences in maternal behaviour appeared to be the mothers' conceptions of what their infants were like." (1970, p. 261). Tulkin and Kagan further report that their working-class mothers tended to feel that they could have little influence on the development of their children. We feel that the different conceptions of infancy observed by Tulkin and Kagan among their middle-class and working-class mothers have a parallel in the different attitudes demonstrated by our High and Low mothers towards language usage, its meaningfulness in the life of the child and its potential for teaching. If the different maternal language behaviours observed in the present study are indeed symptomatic of different basic premises about infancy and early childhood then we cannot but agree with Tulkin and Kagan that "Intervention programs, then, cannot simply focus on maternal behaviour, but rather must help mothers to learn more about child development and to become more sensitive to their own children's progress" (1970, p. 262).

(A bibliography of mother-child interaction studies is in Appendix C at the end of the report.)

PART II

STUDY II

Communicative Competence and the Disadvantaged Child:

Experimental Studies of Communication Behaviour
in 'Advantaged' and 'Disadvantaged' Preschoolers

Part II

Study II -- Experimental Studies of Communication Behaviour in "Advantaged" and "Disadvantaged" Preschoolers

Background

Study II of the Psycholinguistics Projects complements Study I as an additional investigation of some of the socio-cultural correlates of the acquisition of competency in the use of language by preschool children. Collecting observational data about language environments, as we did in Study I, is only one way of studying some of the antecedents of the development of communicative competence, and it is a slow way. Once can also look more closely at the nature of the communicative process itself within and between children, and carry out experiments that will hopefully provide short-cuts to answers about the how and why of the process. We adopted this latter alternative in Study II and attempted to examine some of the main characteristics of the communication process and to explore how these basic ingredients interact with the factors of age and environmental opportunity. As in Study I, we again worked with "disadvantaged" and "advantaged" subjects and our focus was on the preschool child between four and six years of age.

Our aim in these communication experiments has been threefold. Our first concern was Assessment -- to develop a battery of tasks and measures that would give us a well-rounded assessment of a child's communication capacities at a particular age, and which would also allow us to compare his level of performance with that of his peers. Once we were able to rank our subjects on a continuum of Poor to Good Communicators, our second experimental purpose was Training, viz. to pair low ability children with adult models in communication training sessions with the aim of improving the poor communicator's skills. Our rationale here was that by pairing the low competence children with the adult as a more high-powered language model in structured two-way communication settings we would expose them to a wider variety and range of language and language functions than they normally encounter, and that this would have a beneficial effect on the development of their own communicative competence, both receptively and productively. The third phase of the Study II experiments was Evaluative: to compare the progress made in communicative skills by our Training group of subjects matched against their own pre-training Assessment scores and also against the performance of a group of Control subjects who participated in the Assessment and Evaluation but not in the Training phases.

Previous reports of this project have contained detailed reviews of the relevant literature in the field of communication studies and this material will not be repeated here.

A Model of Communicative Competence

The experimental study of communication behaviour in young children (e.g. Flavell 1968) has only begun to pick up speed in recent years, and the findings are still too scattered and too unintegrated to provide us with a systematic analysis of the necessary conditions that foster the proper development of communication abilities. Drawing upon theory and empirical data whenever possible therefore, we attempted to construct our own theoretical rationale for the study of communication behaviour in young children who are in varying states of "advantagedness".

Instead of attempting an exhaustive analysis of all of the variables that could conceivably be involved in a proper definition of communicative competence, we chose instead to try to specify what must be a basic, minimal set of abilities that are possessed by an "optimal communicator" (this strategy is somewhat akin to Chomsky's (1965) attempt to specify the grammatical knowledge that must be possessed by an "ideal speaker-listener"). We were able to identify three processes -- perceptual, cognitive and linguistic -- which we felt must characterize at least some of the optimal conditions for communicating. In other words, we began with an objective conceptualisation of the process and then attempted to adapt our model to the behaviour of the preschool child. We knew, for instance, that the three processes referred to above develop in different ways at different rates at different ages. In the four-year old child, for example, perceptual behaviour is usually more advanced and sophisticated than cognitive skills. We also knew that the development and integration of these processes can be adversely affected by imporverished environments and low-quality stimulation in the early years. By working with both "disadvantaged" and "advantaged" children in our experiments we hoped to discover some of the relations between environmental opportunity and the integration of skills necessary for communicative competence.

To arrive at a first approximation of a suitable definition of communicative ability we stayed fairly close to the experimental situation and chose as a working model of the communication process a typical two-person communication experiment wherein two subjects, an Encoder (speaker) and a Decoder (listener), are not visible to one another but must communicate verbally about a set of stimuli. In the typical experimental situation each partner has access to only limited amounts of information about the task and each must depend upon the other for the construction and transmission of messages so that appropriate response behaviour can be made contingent on the verbal messages.[8]

For experimental purposes the encoding-decoding model approximates many natural situations by requiring a speaker to go from a non-verbal state of affairs to a verbal message and a listener to go from the message to some non-verbal response or result. To help us analyse what must be going on at various points along this communication chain, we established a set of working criteria which would specify some of the necessary conditions for optimal encoding and decoding behaviour. The reader should visualise an experimental situation where two people sit facing one another but are separated by a screen. On each side of the screen, but in different arrangements, are a matched set of pictures which have certain elements in common with one another. The object of communication is one of the pictures. Our analysis of the encoding process in a situation like this was greatly helped by Roger Brown's discussion of the requirements for encoding ability (Brown 1965, Chap. 7).

The first requirement for an Encoder is a very perceptual one. He must be able to make an informational analysis of the stimulus array that is the object of communication, so as to identify the distinctive properties of the target stimulus to be transmitted. Many of the children in our experiments failed in this aspect of the task because they failed to encode just those critical features of the target that made it distinctive.

The second requirement is the linguistic one: it is necessary to control a lexicon and the grammar of a language in order to construct an adequate verbal message. This may go without saying for adults, but it creates special problems when studying the communications of children below 6 who have not yet fully mastered the syntax or morphology of their language.

The final requirement is primarily a cognitive one. The Encoder must realistically assess the informational needs of his Decoder. This involves decision processes, comparative judgments and the "representing to oneself the attitude of the other." The egocentric viewpoint of the preschool child (or the "preoperational" child, as Piaget calls him) makes it difficult for him to put himself in another's shoes.

We believe that these conditions constitute the basic "minima" for production of accurate messages. We can briefly describe a similar set of requirements for receptive or decoding ability. Just as the Encoder translates the discriminated properties of a referent into a verbal message form, so the Decoder in responding to the message has to be able to go from words to some set of appropriate mental representations. As Roger Brown puts it, one has to be able to "cash words into referents."

The analog of the lexical and grammatical control that is necessary for accurate encoding of experience is, of course, receptive mastery of the language by a decoder such that he can easily derive the basic structure and meaning of a perceived sentence. The two tasks are probably almost identical in a linguistic sense, except that the Encoder constructs while the Decoder translates language. The latter situation has additional psychological aspects, again involving a structured system of referents. The Decoder must have a set of referents for language stored somewhere, in some form, as a basis of the meaning of the words he hears. This system of referents has to be derived from common environmental and cultural experience if it is to have any communicative value whatsoever; and just as the Encoder has to have grammatical control of the words he uses, the Decoder must be able to exercise some control over his system of referents if his response to the verbal message is not to be too specific or too generalized.

Finally, if the Encoder also has to assess the informational needs of the "other", what complementary processes must operate in the Decoder? If the message he received is over-communicative, he has to be able to handle its redundancy; if it is under-communicative, the Decoder has to know what it is that he has not received, i.e., a knowledge of his own informational requirements. For example, he has to be able to recognize a mismatch between a message and an array of referents for which the message is intended. He must be able to encode the critical omissions into a message code for himself and/or others. This part of the process may often require a discrimination of environmental features parallel to the Encoder's discriminations.

So much for the details of our rationale. We must reiterate that in spelling out the six requirements above for efficient encoding-decoding behaviour we have been talking about optimal communication conditions. Obviously our description is an oversimplification of the complexities of the communication process, but a simple model is to be preferred when one has to apply its principles to the study of the preschool child where developmental and experiential considerations further confound the interaction of perceptual, cognitive and linguistic factors. Given our analysis of the problem, then, our next task was to construct a representative assortment of experimental tasks and communication measures based on the above principles which would help us assess both receptive and productive competence in our various groups of children, and tap into the level of functioning of most of the processes we believe essential to accurate communication. A description of our battery of tests is provided below.

The Experiments

A. Assessment

(1) Subjects

The experimental sample of children who participated in all three phases of the study came from the Central Nursery School in Cambridge, Mass. All of our testing was done at the school. This is a private nursery school with both a racial and socioeconomic mix of pupils. After working with an initial pool of about 24 of these children we were able to obtain a matched group of

16 experimental subjects, comprising four pairs of children from high income homes (including families of university professors) and four pairs from poor families (including some on Welfare). Both sets contained male and female, and black and white children. These subjects, aged from 4 to 5 years, received all of the assessment battery described below. In pairing the children for the communication tasks each pair was matched by race and socioeconomic status.

(2) Tasks and Procedures

Previous reports (Nos. 3 and 4) have described the extensive pretesting that was carried out with a large variety of communication tasks. We conducted these pretests with over 40 preschoolers who came from a number of nursery schools in the Boston metropolitan area and who were of varying socioeconomic status.

Seven tasks were finally selected to provide the Assessment battery for the experimental group of subjects. They include one perceptual measure, two measures of language control and four communication tasks. A description of these tests, together with the instructions and administration procedures, will be found in Appendix D. All experimental sessions were tape recorded and observed by an assistant.

Task 1 (in Appendix D), Discriminability, addresses itself to the question of how well a child can make a perceptual analysis of a stimulus array, and how this is related to his encoding skill in general. Using the same Production Board as in task 4, we tested each child's speed and accuracy in matching pictures. Each child was handed one picture at a time and asked to find its match among an array of six pictures on the Board in front of him. His performance was timed, and mismatches noted.

Tasks 2 to 5 form the central part of our experiments, and all involve some kind of communication game in which one child tells another child all he can about a picture in an array, or a picture on a box concealing hidden candy. Tasks 2 and 3, Picture Boxes and Cartoon Boxes, are both child-child communication tasks which provide us with spontaneous "baseline" messages about key target stimuli. In the Cartoon Boxes experiment, two children are separated by a screen and each child has before him 4 small boxes turned upside down. The boxes have cartoon pictures on them, taken from regular newspaper comic strips. One child (the decoder) turns his back while the experimenter places and M&M under corresponding target boxes on either side of the screen. The decoder then turns around, and the child who has watched the experimenter must tell his decoding partner which box the M&M is in by describing the picture. Winning an M&M is contingent on correct decoding and so both children are encouraged to perform well. Since the candy is good to eat, the children are highly motivated in this experiment, and even the youngest ones play eagerly and enthusiastically. Finding the M&M is usually accompanied by much jubilation. The Picture Boxes task is similar to the latter, except for the fact that instead of cartoons the boxes are topped with pictures from a popular black magazine showing domestic scenes with a mother and her two children.

Task 4, the Production Board, has been used successfully in previous communication experiments with preschool children (McCaffrey 1968, Moore 1970). In this standard communication task, two children are seated on opposite sides of a screen. Each child has before him a board on which 8 pictures are mounted. Each child has the same set of pictures, but they are arranged differently on each board. One child describes a target picture on his board in such a way that the other child can pick out the same picture from the array before him. Then the roles are reversed, and the Encoder becomes the Decoder.

Task 5, "The Third Man" involves a three person communication chain: adult-child-child. Here we test the influence of an adult model on a child's encoding and decoding performance. Using the "baseline" target pictures from tasks 2 and 3, one child has to describe a picture to another child after hearing an adult's accurate description of it. This variation of the two-way communication experiment is very valuable because it provides the opportunity to see the effects of imitation and modelling on the child's productions. The Third Man data allow us to compare 1) the child's initial spontaneous "baseline" encoding of the same target picture earlier in Tasks 2 and 3, 2) the description he produces for the second child after hearing the adult description, 3) the correspondences between his baseline encoding and his later encoding after exposure to the adult model.

It should be emphasised here that the adult modelling in this task (and in similar tasks throughout the study) was always implicit and never explicit. The child was never told to imitate, or to 'say what I say' or to talk the way the adult talked. The tasks were always played as a game with a specific purpose and except for being told to listen carefully, the child's attention was never directed explicitly by instruction to the structure of the adult message.

Tasks 6 and 7 are our measures of language control. The Sentence Production task gives us an idea of the kinds of English sentences the child can produce. The task calls upon the child to listen to a brief story, then produce the appropriate last sentence. Examples of the ten test sentences are provided in Appendix D. These sentences are adapted from a test developed for use with adult aphasics at the Boston V.A. Hospital by Drs. Harold Goodglass and Jean Berko Gleason, along with Mrs. Nancy Bernholz and Miss Mary Hyde. The sentence types called for in our version include a variety of common English forms — the present with a direct object, the passive, etc. For instance, a story that calls for the production of a sentence containing an imperative transitive berb with a direct object is: "My little son eats lunch. He has not touched his milk. I want him to drink it. I say ....what?" Children and adults alike respond with "Drink your milk" to this item. In addition to this assessment of syntax, we also added a measure of the child's morphological development, popularly known as the "Wugs" test. We selected four of the most significant items from Berko's (1958) test of morphological acquisition. These deal primarily with the formation of the plural and the past tense. The fact that a child can make plurals or past tenses of common words like "dog" or "play", does not prove that he has internalized general rules for the formation of the plurals and past tenses. This test uses nonsense words and asks the child to supply appropriate items. The child is shown a picture of a bird-like animal and told "This is a wug". He is then shown two such animals and the experimenter says "Now there is another wug. There are two of them. There are two ---.?" The child supplies the word "Wugs", if he can make the simple plural of new words in English. In similar fashion, using different pictures, we tested for the ability to form a more difficult plural (as in "watches"), a simple past (as in "played"), and a more difficult past (as in "melted").

(3) Results

Two points need emphasising before the assessment results are presented. First, Study II carefully avoided using any class-based norms in its measures of communicative competence. Instead, as we discussed above, we performed an a priore, objective analysis of the conditions necessary for optimal performance in our experimental tasks. Having identified three components of competence (perceptual, cognitive and linguistic), our battery of tests attempted to tap into each of these components in the communication behaviour of our subjects. Apart from the two measures of language control the basic question asked by our communication measures is not how well their utterances conform to standard English; rather our measures test the child's language usage. Provided he has minimal mastery of some form of language (regardless of dialect) we are essentially asking how well he uses what he has for the purposes of communication. Approaching the problem in this way we have been able to probe the strengths and weaknesses of each child's pattern of communication skills, with the intention of using the evidence to plan training sessions appropriate to the children's needs. Secondly, we also did not entertain any preconceptions that the upper class children would automatically be better communicators. The performance of all subjects was measured by a set of criteria which allowed each child to demonstrate the range of his or her capacities. As it turned out, levels of communicative skills were usually related to levels of socioeconomic status, but there were also some interesting asymmetries in the data. The general findings will be discussed under the three categories of perception, language and communication skills.

(i) Perception: In the Discriminability task the children displayed a wide range in ability, both so far as speed and accuracy were concerned. Some children were able to match in 4 seconds pictures that other children took as long as 45 seconds to match. The performance of some children was flawless, while others made many errors. The greatest variety of performances was provided by the group of children who were rated overall to be low on communicative competence. Some poor communicators discriminated and matched very well, but others did very badly. On the other hand, good communicators were all good at this task. The data appear to confirm our hypothesis that good perceptual skill is a necessary but not a sufficient condition for good communication.

(ii) Linguistic Skills

a) Morphology -- in scoring these items a numerical value was assigned to each response. A completely incorrect response was given a zero, the wrong allomorph of the right morpheme (an answer like "wugses") was given a 1, and the correct ending was given a 2. Each child's scores were then totaled, to give one figure for his overall morphological score. Again, we found a wide range of ability. The children who performed best on the morphological tasks came from high income homes, those who got the lowest scores tended to come from low income backgrounds, but family background was not completely predictive of the child's performance, since the middle group of children -- those scoring 3 or 4 out of a possible 8 -- came from both kinds of background. Table II-1 shows the morphological scores of the children. The low S.E.S. group scores range from 0-4, the high income group from 3-8.

b) Sentence Production -- this data was scored by a numerical system designed to capture both the semantic and syntactic aspects of the children's responses. If the child was unable to answer, he was given a zero. If the response contained both major and minor grammatical errors, a score of 1 was given. If the major grammatical point was missed but the rest of the sentence was correct, the answer was scored 2. A score of 3 was given if the sentence had only minor grammatical or semantic errors, and a score of 4 was given for a sentence that was correct in all respects. Again, an overall score was obtained for each child and the results are in Table II-1. As this table shows, there is virtually no overlap between the low income (23-34) and the high income (34-39) groups in the sentence production scores.

(iii) Communication: In scoring performance on the communication tasks, we used four judges to assess each child's responses along a number of dimensions:

(i) Egocentricity — the degree to which the child's message takes into account the needs of the listener. It is possible for a child to give a perfect description understandable only to himself.

(ii) Decodability -- does the child's original, "baseline" description enable an adult listener to choose the correct picture?

(iii) Copying or Imitation -- how much does the child's description change after hearing the adult model's description, i.e., does he imitate?

(iv) Message Improvement -- how much does his description improve after hearing the adult model?

(v) Overall assessment of communicative adequacy.

Except for egocentricity, the results of the assessments in the above categories have been summarised in Tables II-2 and II-3. "Third Man" therein refers to the descriptions produced after an adult model has been heard.

Our assessments of egocentricity had not been quantified during this pretest phase. We felt that the degree of egocentricity in the children's language fell along a rough scale and we preferred for the time being to view this qualitative phenomenon in terms of developmental "levels". We were able to identify roughly three or four such levels in our subjects' picture descriptions. At the lowest, most egocentric level, the child points at the right picture or box and says "this one". Children who are really completely at this level cannot be made to understand that the other child cannot see what they are pointing at, and when pressed to elaborate their answer merely provide variations on a theme. They say "it's the one right in front of me", or "it's the one with the M&M under it", or demonstrate circular reasoning by saying "the M&M is in the box with the M&M under it."

At the next level of egocentricity, the children use pronouns, but without antecedents -- the answer makes good sense to the speaker, who says something like "she's putting them in there", but since the other child does not know who "she" and "them" are, or where "there" is, the message is not useful.[9] At higher levels, the child talks in a specific way about the pictures, he "sets the scene", and the messages sound very much like adult descriptions.

The degree of egocentricity in a child's message was generally related to his socioeconomic level. Naturally enough most of the communications of all of the children usually contained some degree of egocentricity since the cognitive orientation of the preschool child is still highly egocentric. But the poorer children in our sample tended to give a relatively higher proportion of responses with an egocentric viewpoint than did their more "advantaged" peers.

Tables II-2 and II-3 show some of the strengths and weaknesses of the two groups of children on measures of communicative ability and adequacy. In Tasks 2 and 3, for example, less than 50% of the "disadvantaged" group produced messages that were judged to be decodable by adult judges (Table II-2) while 7 out of the 8 high income children did produce decodable messages. A similar pattern of communicative ability was apparent in Task 5, the Third Man task (Table II-2). Tables II-2 and II-3 show however that both groups of children showed positive effects of being influenced by the message style of the adult model in Task 5. The child-child messages in this task for both groups of children showed imitation of some kind of the features of the model's message. On an overall rating of communicative adequacy that took into account a variety of factors in a message (content, syntax, egocentricity) the quality of the "baseline" picture descriptions (without exposure to an adult model) of the "advantaged" group ranged from "adequate" to "very good" (Table II-3). The descriptions of the low income group were judged to range only from "very bad" to "adequate". After being exposed to the adult model, however, three of the "disadvantaged" children improved the quality of their messages. The descriptions of all 8 of the upper income children improved in quality after exposure to the adult descriptions.

Here are examples of descriptions from children who were judged to be High or Low in communicative competence. The following excerpts come from a black girl L. who comes from a high income professional family, and who was one of the best encoders in our sample. Her spontaneous baseline encoding in the Picture Boxes task is illustrated first, then the adult model's description from later in the experiment, and finally L's message to her partner after decoding the adult's message. Notice how right at the outset of the first task L. "tests the channel" with a question -- characteristic of only the good communicators. Notice also the amount of borrowing from the adult description:

1) Exp: Now L. to describe.
L.: Jimmy?
Partner: Huh?
L.: There's a policeman putting a little man in jail.
Partner: That's all?
L.: Yeah!
Partner: (Chooses correct picture)

2) Adult Model: The picture with the M&M under it shows a chubby fellow wearing a blue suit and a cap and a brown gun and he's walking behind a little fellow and holding him by the shoulder, and they are walking into the jailhouse.

3) L.: Well, a policeman with a brown gun is holding with a little man with blue pants by the shoulder, gonna put him in jail.

Compare this performance with that of a comparable black female subject, this time from a poor family. This child, V., received the same experimental treatment as L. above, and the same pictures to describe. Notice how much prompting is required throughout, and the high degree of egocentricity.

1) Exp: You can tell S. about this picture (points).

V.: -- (incomprehensible) -- in back.

Exp: The what? You hear that?

V.: He's pulling his shirt. (This was followed by further prompting until eventually the partner chose correctly.)

2) Adult Model: (As above.)

3) V.: Um. The pullin' the short -- um, I don't know -- um, tell 'em get back.

Um, da man in back of this man (prompt) the blue shirt -- ahhh -- oh, I don't know (prompt).

One further example from a "disadvantaged" white boy T. (4½ years) will illustrate the kind of egocentric behaviour we discussed earlier. The child is encoding in the Picture Boxes task:

Exp: -- so you tell him about that picture.

T.: It's the one -- here (points).

Exp: It's the one here? O.K., well he can't see you so tell him about the picture so he can tell, because he can't tell where you're pointing.

T.: The M&M -- the M&M is with -- with the (?) right there -- with the (?) (further explanation by Exp.)

T.: That -- that picture has an M&M under it.

Exp: What's in that picture?

T.: M&M.

Exp: Yes. But what's in the picture? What's happening?
What does it look like?

T.: Cat.

Exp Cat. O.K. Anything else?

T.: And two cats and a mother.

Exp: Two — two what?

T.: One cat, two kids and one mother.

The combined assessment scores were used to rank all of the subjects on a continuum of communicative competence, from high to low. As it turned out, these rankings tended to match socioeconomic status such that all of the children from poorer families were at the low end of the scale of competence. High S.E.S. children (with one exception) had, overall, higher communication scores.

B. Communication Training Sessions

The assessment rankings were next used to split the 16 experimental subjects into a Training and a Control group. Each group contained 8 children, four who had High Competence and four who had Low Competence ratings. This meant that the Training Group contained a mixed set of good and poor communicators and each was matched with a similar subject in the Control Group. This matching was simply achieved since it only meant the splitting (into Training and Control) of the pairs of partners who had played the communication games together during the Assessment phase of the study. The 8 Control subjects received no special training except for attending as usual (like the Training subjects) their regular half-day nursery classes.

1) Procedure and Materials

The training sessions were spread over a six-week period. Each child saw the experimenters four times, once a week each. Each session lasted from fifteen to thirty minutes depending on how fast the tasks were accomplished. During the sessions, a single child was paired with an adult in variations of the communication games that were used in the assessment battery. Three female experimenters participated in the sessions: one who played encoder or decoder, one who handled the materials, and one who observed, took notes and handled the tape-recorder.

The children were required to encode (for the adult) descriptions of a variety of materials and decode standard messages from the adult about the same materials. The materials ranged from real objects and real candies through pictorial representations of different degrees of complexity.

In the first week's session, the adult and child sat on opposite sides of the screen with four boxes in front of each. On top of each box was an actual object, and the general standard form of the message was: "The M&M is under the box that has the mitten on it." Child and adult took turns telling one another where the hidden candy could be found. When the child's messages were difficult to decode, the adult asked questions and helped him in every way short of telling him what to say.

Each week thereafter began with a review of the previous week's work prior to introducing new materials, and each week's descriptive task was a little harder. The adult always gave the child standard adult messages to provide him with a good model.

In the second week of training, simple colored photographs (from magazines, catalogues, etc.) of single objects were substituted for the real objects. A typical standard adult message was: "The M&M is under the box that has a picture of a bicycle on it." In the third week, colored pictures of greater complexity were used with descriptions like: "The picture shows a little girl wearing a red and white dress, and she looks like she is jumping." In the fourth week the pictures were in black and white and had more detail.

2) Results

All the children's communications showed marked improvements over the four week period. Some of the progress was quite dramatic. At the outset there were varying degrees of success in producing messages that resembled the optimal standard form. Many of the children began by pointing but by the end of the session were producing descriptions like the adult message. Those children who did not readily make sentences with dependent clauses solved the problem by word compounding: they said, "The M&M is under the mitten box." Or, more typical of one or two low competence subjects, produced incomplete sentences with compounds: "Underneath the mitten box".

The variety of communicative skill in the first session ranged from that of a high competence black boy J. who readily produced the adult-type message, "I put it under the box with the white fork on it", to the slow but positive progress of the low competence girl F., who came from a high income white family:

1) "It's over the red mitten box. It's this box. It's in the cup.

2) "It's under the bar of soap that has the bar of soap.

3) "The M&M is under the red box that has the red mitten on it."

Most of the children continued to show progress in the succeeding sessions. The amount of retention of training was quite remarkable. During the review period at the beginning of the third session, seven out of the eight subjects were able to produce messages that approximated a model sentence which they had not heard for at least a week. The progress of the low competence children can be illustrated with the performance of the girl Sh. whose encodings during the assessment pre-tests had generally been quite primitive and very egocentric. By the third and fourth week of training she was producing complete sentences to describe new pictures, e.g., "The girl is at the beach in the water," and "The girl is laughing with her hair down, and there's one boy and one girl and there's a cake."

C. Post-Training Evaluation

After the training period had been completed, all of the children from the training and control groups were seen in their original pre-test pairs for a post-test evaluation of the effects of training. In the first two evaluation tasks the pairs played the same kind of encoding-decoding game they had done in the Assessment phase of the study. In the last two post-tests the children were separated and each performed two generalisation tasks with the adult experimenters.

1) Tasks:

(i) Mother-child pictures: here each child described to the other the same mother-child Picture Box picture he had described once before in the Assessment phase.

(ii) Training pictures: each child encoded a picture taken from the set used in the third training session. The Training group subject encoded a picture which the adult had described during the training session but which the child had never himself described before. The Control subject encoded a picture which he had never seen before, but this was a picture that his Training partner had described during the third training session.

(iii) Generalisation: This and the next task were intended to be simple, limited generalisation tests. Here each child played encoder to an adult and described a new picture he had never seen before (referred to as the "Jewelry" picture since it shows boys removing jewels from a treasure chest).

(iv) Generalisation: since all of the other pictures were flat, two dimensional representations we attempted to provide a variation by having the child describe successively two pictures-slides presented to him three dimensionally in a Viewmaster. The slides showed scenes from The Night Before Christmas. The child was asked to tell us what he saw and if the two pictures were different. Some of the children, unfortunately, were so excited by the sight of a 3-D Santa Claus, that they were rendered virtually speechless and could only repeat, "Santa Claus! I see Santa Claus!" We therefore had to give less weight to the Viewmaster data.

The post-tests took no more than a half hour for the children, all of whom thoroughly enjoyed themselves.

2) Results

There are many ways of rating the goodness of a communication: the most obvious is on the basis of its decodability by the person to whom it is addressed. In listening to the preschoolers, we were less concerned, however, with the response of the decoding child. Decoding was rarely a problem with our subjects and when it was, it could usually be attributed to lack of attention, or the inability to hear from behind the screen. The production of adequate encodings was the main problem for our subjects and our analyses accordingly paid more attention to definable and structural aspects of this side of communicative competence. Since the children were being trained by an adult model, it was reasonable to assume that their communications ought to be decodable by adults. We therefore judged each message as to whether or not an adult looking at the array of pictures could tell which one the child was describing. We also looked at various linguistic and paralinguistic features of the messages: the overall word count, presence or absence of qualitative and quantitative adjectives, complex sentences, prepositional phrases, and so forth. For the large variety of linguistic, perceptual and cognitive data produced by the pre-tests, two of our measures were particularly useful and informative. These were quantitative ratings of Egocentricity and of Communicative Adequacy, and we shall dwell on them here.

(i) Egocentricity: The child's message can be accurate, and referential, but totally inappropriate if it fails to communicate to anyone but himself. Messages that fail to take into account the listener's perspective or other special needs are called egocentric. An examination of the children's messages in the pre- and post-tests revealed that there was a decreasing scale of egocentricity as the messages became more like adult communication:

0 the child is unable to focus on the task at all.

1 the child points at the right picture, but fails to verbalize at all.

2 he points and says "that one", "the one right there", etc.

3 his reasoning is circular: "the M&M is under that box -- the one with the M&M under it."

4 he describes the picture using pronouns without referents: "she's got him."

5 he uses definite articles without first telling us which picture he is talking about: "the lady is saying goodnight to her children." The communication is accurate and decodable, but does not set the scene in any way.

6 he first sets the scene in a general way, so that the listener knows which picture he is talking about, and then gives specific details: "There is a lady and her two children and she is tucking them into bed."

This egocentricity scale was used to rate all of the responses to the mother-child pictures in the pre-test and all of the items in the post-test.

Egocentricity on the Pre-Test and Post-Test Mother-Child Pictures

Subjects	Pre-Test	Post-Test
Control/High Competence		
La	5	6
Hi	5	5
Er	5	6
Ro	6	6
Control/Low Competence		
Ve	1-5-5	2-5-2
Jo	0-2-2-4	5
Ho	6	5
To	2-3-3-5	5
Training/High Competence		
Ji	4-5	6
Le	5	6
Sy	5	6
Da	4-5	6
Training/Low Competence		
Sh	2-4-2-5	5
Fa	5	4-5-4
Ra	1-4-5	6
St	1	unavailable

Figure 1

Figure 1 indicates the levels attained by both groups of children in our egocentricity ratings. Where a range of answers or descriptions was supplied by the child, each was rated separately, so that a score of 1-5 indicates that the child began by pointing, but then moved to a higher order of response. Where a single score is given this indicates that the whole message was at that level. Since our scale is at best an ordinal one, these descriptive range statistics are more meaningful than averaging.

As Figure 1 indicates, both Training and Control subjects tended to improve. Among the Training subjects, however, five out of the eight all had post-test scores higher than the highest level reached in the pre-test, and there were no relapses. Among the Control subjects there were only three instances of higher post-test scores, and one subject showed greater egocentricity in the post-test. This latter child (LowCompetence/Control) had been paired with the Training subject Ra who, as Figure 1 indicates, showed definite improvement in performance. We were also able to give the post-test to two children who had not been included in the pre-test (children not in our sample, but students at the same school). These children performed at a level lower than any child in the sample on the post-test. Overall, the children who had been trained tended to be less egocentric than the Control group, and to give better messages, as can be shown by a comparison of their communicative adequacy scores.

(N.B. The Low Competence/Training subject St did not show up for the evaluation session. The child seemed to have problems, and his attendance at the nursery school was erratic.)

(ii) Communicative Adequacy

A more general rating that was applied to the data from the first two post-tests in addition to the egocentricity scale was an overall adequacy score. The adequacy scale takes into account both the behaviour of the subject in attempting (or failing to attempt) to handle the task and the linguistic sophistication of the message itself. The adequacy ratings are as follows:

1 the child begins by being very negative; he says he does not know, or points, or grunts, repeatedly; after much encouragement and many prompts, he offers a word.

2 as above, but the child eventually produces a phrase.

3 the child begins to describe the picture without pointing and the total message has referential elements, but is confused or inadequate.

4 the message is adquate, but contains serious grammatical defects, or is arrived at only after prompting.

5 the message is adequate, but contains minor referential or grammatical problems.

6 message is good, but contains minimal error, or is not quite complete.

7 good message, indistinguishable from what an adult might say.

A typical pattern of results from this analysis is shown in Figure 2 for the mother-child pictures in the Picture Boxes task. As Figure 2 shows, the children in the Training group made real improvement in the adequacy of their messages. The level of adequacy also tended to be higher in the Training group. Only one Training child did not score higher in the post-test than she had in the pre-test, and her post-test scores were not as high as her third week training scores, which reflects the fact that she was simply not performing as well as she could on the post-test.

Communicative Adequacy on the Pre and Post-Test Mother-Child Pictures

Subjects	Pre-Test	Post-Test
Control/High Competence		
La	7	5
Hi	7	5
Er	2	5
Ro	5	6
Control/Low Competence		
Ve	2	2
Jo	2	3
Ho	4	5
To	2	3
Training/High Competence		
Ji	5	6
Le	6	7
Sy	2	7
Da	5	7
Training/Low Competence		
Sh	2	5
Fa	3	2
Ra	3	4
St	1	unavailable

Figure 2

A feeling for the type of improvement brought about by training can be obtained by examining individual Training subject's responses on the pre- and post-test pictures:

Child Sy (High Comp.)	Pretest: I don't know what it's about. (prompt) I see a different -- (prompt) I don't know. cat -- (prompt) and people sleepin' (prompt) I don't know. That's all I can say.
	Post-test: The M&M is under the picture of 2 kids sleeping on a bed, and a cat and a mother next to them, and it's a girl and a boy.
Child Le (High Comp.)	Pre-test: People are sitting next to each other.
	Post-test: The M&M is under the picture with a cat and a mother who's holding the cat, and telling her baby to pat it, I guess.
Child Sh (Low Comp.)	Pre-Test: I don't know (prompt). It's under the picture box (prompt). She's holdin' a kitty. (prompt) It's under there (prompt) the little girl and the big one (prompt) sitting.
	Post-Test: The picture shows where a girl with a mother holdin' a cat and two girls lookin' at it.

(iii) Egocentricity and Adequacy in the "Jewelry" Generalisation Picture:

One of the most noticeable effects of the Training was how it helped the children to have more complete, concise sentences. All of the Training subjects also learned to approach the communication problem as a verbal one and in the post-tests never resorted to non-verbal pointing or showing, as some of them may have done in the pre-tests, and as some of the Control children still continued to do in the post-tests. The best illustration of this is provided by the responses to the "jewelry" picture, which none of the subjects had seen before. The ratings of these descriptions are in Figure 3.

Communicative Adequacy and Egocentricity in
a Post-Test Generalisation Task

Subjects	Adequacy	Egocentricity
Control/ High Competence		
La	6	6
Hi	7	5
Er	6	5
Ro	5	5
Control/Low Competence		
Ve	3	4-5-1
Jo	2	1-4-5-1
Ho	4	5
To	4	5
Training/High Competence		
Ji	7	6
Le	7	6
Sy	5	6
Da	5	6
Training/Low Competence		
Sh	4	6
Fa	5	5
Ra	3	6

Figure 3

The adequacy ratings for the two groups tend to overlap somewhat, but the Training subjects are, on the whole, less egocentric than the Control children. This trend is strongest among the matched pairs of low competence children, and two Training subjects in this group received top scores (least egocentric) for their descriptions of the new picture. Moreover, six out of eight children who introduced their descriptions with prefatory statements of the form, "It's --", or "There's -- ", or "The picture shows --", were Training group children. Six of the Control group made no objectifying statements of this sort.

If one were to combine both sets of scores in Figure 3 to come up with some overall measure of message "quality", one could reasonably conclude that the Training children produced messages of more consistent, higher quality than the Control subjects.

D. Discussion

The Study II results show that effective methods and measures can be devised to assess the communicative competence of children who are in varying states of socio-cultural "advantagedness", and to provide training in communication skills for these children. We found our nursery school subjects eager to play communication games and sensitive to the models we provided them. Our post-training evaluation showed that many of these children (including the most "disadvantaged") were greatly benefitted by such training over the short term and improved their ability to describe pictures aloud. The handicaps of the "disadvantaged" subject upon entering the experiment were possibly demonstrated by the fact that his baseline scores and model imitations were usually less than that of his more "advantaged" peers. Some of these slow starters, however, made dramatic progress during the Training sessions and this is probably reflected more in the individual transcripts than in the tables of scores. Children who began by grunting and pointing ended by porducing good descriptions. Post-test data generally indicated that the children who were trained gave more decodable, more formally organised, less egocentric descriptions than they had previously. The full meaning of these gains remains somewhat equivocal since the difference between Training vs. Control group gains was not as clear-cut as we might have hoped. There are a number of possible explanations for the post-test performance of the Control subjects. One major factor is that they were a rather special Control group since they were also attending a special nursery school. Their scores may simply reflect the general, beneficial effects of this kind of experience. We would most likely have seen much greater Training vs. Control differences if our Control group had come from a non-nursery population. A longer training period also would probably have improved the performance even further of the

Training group in general, and of its lowest members in particular since they had so much farther to go. The vicissitudes of post-tests are also reflected in the fact that some of the experimenters felt that some of the trainees were not performing as well in the child-child evaluation tasks as they had done in the adult-child training dialogues.

CONCLUSIONS

Both Study I and Study II, although only pilot studies in many respects, have demonstrated that sub-cultural differences in language behaviour can be reliably observed, described and even measured. In the domestic environment of the young child where so many of his basic skills are nurtured, Study I has found a consistent pattern of differences in mother-child verbal interaction styles across homes. Some of the observational data suggests that the language of the child is less well developed in homes that could be categorised as relatively impoverished from a psycholinguistic point of view. The full interpretation of the role of some of the domestic environmental variables in the development of the child's communication skills will have to await some future study which will combine the best techniques and measures of Studies I and II in order to relate test performance and domestic language antecedents for the same child. More fine-grained linguistic analyses of the Study I data remain to be done. Hopefully, further study will elucidate even more specific and crucial interaction variables which would lead to further specific observations of additional families. Ultimately we would hope to apply the results to the construction of language programmes for disadvantaged mothers via parent-child centres, for instance, as well as to the development of special training programs at the preschool level.

Study II has shown that the imaginative application of some standard experimental techniques to an applied problem can produce some beneficial results for the disadvantaged preschooler with underdeveloped communication skills. With further refinement of measures and the development of more varied training materials, we would hope that there could ultimately be put together a well-tested set of assessment techniques, tasks and materials that could be used in preschool language programs with specific application to the disadvantaged child.

Footnotes

1. Even Bernstein himself has not yet studied parent-child verbal *interaction* and to date, only Plumer's thesis study (1970) appears to have faced this complex problem squarely.

2. See Progress Reports #3 and 4 for a fuller discussion of the problem circumstances that prevented such a large proportion of the original sample of "possibles" from being available or suitable for this study.

3. The final size of the experimental sample of families was ultimately reduced to seven when one of these two Welfare mothers dropped out of the study. After only the first few visits by an Observer, this black mother obtained a full-time job which kept her out of the home all day so that observation of her interaction with her child was no longer feasible. Since the observation schedules were already well under way in the remaining seven families, it was decided in view of the time remaining not to replace the missing family.

4. The final group of families came from a variety of districts in and around Boston: Roxbury, Dorchester, Cambridge, Somerville, Arlington, Winthrop, Bedford.

5. Not all weeks were usable due to family illness, school vacations, trips, etc.

6. The profiles are only for the seven families who provided us with a complete set of recordings.

7. Speech by other family members, or outsiders is fitted into the 'mother' or 'child' column whenever and wherever necessary.

8. See, e.g. Glucksburg, Krauss and Weisberg. *J. Exp. Child Psychol*. 3, 332-342, 1966.

9. We have previously discussed such usage of "point-at-able" words in Progress Report #1, p. 13, under the topic of "Deixis", the notion that some words (like 'now', 'then', 'here', 'there') "show" or "point out". The use of deictic terms in a message without prior elaboration of the attributes or features of the objects of communication, can result in very impoverished, egocentric language even among adults.

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TABLE I-1

Examples of Four Families

From Both Ends of the Socioeconomic Scale

	Lo Black	Lo White	Hi Black	Hi White
PRB Index	13	13	93	93
Mother				
Age	32	22	24	29
No. of prior children	1	1	0	0
Education	8 yrs.	8 yrs.	16 yrs.	16 yrs.
Father				
Occupation	Service Worker	Service Worker	Professional	Professional
Income	Less than $2000	Less than $2000	Over $10,000	Over $10,000
Education	8 yrs.	8 yrs.	15 yrs.	18 yrs.
Child				
Age	3½ yrs.	3 yrs, 10 mos	4 yrs.	3 yrs, 10 mo
Sex	F	F	M	M
8 mos. Bayley:				
Motor	37	40	41	34
Mental	83	80	81	77

TABLE I-2

ocioeconoric Status	Hi Black		Hi White	
amily I.D.	Family M	Family D	Family C	Family J
amily PRB Index	80	93	93	83
ome Intact?	Yes	Yes	Yes	Yes
other:				
Age	30	31	29	26
Years of Education	12	12	16	12
No. of Children	1	2	2	2
ather:				
Occupation	Professional	Professional	Professional	Professional
Income	$7-10,000	$7-10,000	$7-10,000	$7-10,000
Years of Education	16	16	17	17
cal Child:				
Age at Dec. 1969	3.5	3.8	3.6	3.6
Sex	M	F	M	F
Bayley Test Scores at 3 mos. of age:				
Motor	32	38	38	33
Mental	78	82	82	77

TABLE I-2

(continued)

Socioeconomic Status	Lo Black		Lo White	
Family I.D.	Family M	Family W	Family B	Family M
Family PRB Index	40	40	23	13
Home Intact?	Yes	Yes	No	Yes
Mother:				
Age	28	22	26	26
Years of Education	13	12	11	8
No. of Children	2	1	2	3
Father:				
Occupation	Craftsman	Service Worker	Service Worker	Service Worker
Income	Less than $3000	Less than $3000	Welfare	Less than $2000
Years of Education	11	12	11	8
Focal Child:				
Age at Dec. 1969	3.11	3.9	3.7	3.10
Sex	F	M	F	F
Bayley Test Scores at 8 mos. of age:				
Motor	36	33	32	40
Mental	83	75	81	80

TABLE II-1

Grammatical Ability

Subjects	Morphology (Max Score = 8)	Sentences (Max Score = 40)
High Income		
E.G.	6	37
R.S.	3	35
D.S.	4	36
H.B.	4	34
L.D.	7	35
L.C.	6	39
J.C.	8	39
Low Income		
J.S.	2	23
S.D.	0	28
V.C.	1	23
S.S.	1	30
R.R.	4	27
H.Br.	3	30
F.C.	2	34

TABLE II-2

Communicative Ability: Decodability of Message and Imitation of Model

SUBJECTS

High Income	Baseline Description Decodability by Adult[a]	Third Man Description Decodability[a]	Imitation in Third Man
E.G.	0	1	Yes
R.S.	1	1	Yes
D.S.	1	1	Yes
H.B.	1	1	Yes
L.D.	1	1	Yes
L.C.	1	1	Yes
J.C.	1	1	Yes
Low Income			
J.S.	1	1	Yes
S.D.	1	0	Yes
V.C.	0	0	Yes
S.S.	0	1	Yes
R.R.	0	0	No
H.Br.	1	1	Yes
F.C.	0	0	Yes

[a] Key: 1 = description is decodable by adult

0 = description is not decodable by adult

TABLE II-3

Communicative Adequacy and Improvement from Baseline Encoding to Third Man Encoding

SUBJECTS

Middle Income	Baseline Ranking[a]	Third Man Ranking[a]	Baseline-Third Man Difference
E.G.	3	4	+1
R.S.	3	5	2
D.S.	3	5	2
H.B.	4	5	1
L.D.	4	6	2
L.C.	5	6	1
J.C.	4	6	2
Low Income			
J.S.	3	3	0
S.D.	2	1	-1
V.C.	1	2	1
S.S.	0	5	5
R.R.	2	1	-1
H.Br.	3	4	1
F.C.	2	2	0

[a] Key:
6 - excellent
5 - very good
4 - good
3 - O.K.
2 - poor
1 - bad
0 - very bad

APPENDIX A

Study I Interview/Rating Schedules

CHILD'S NAME______________________________ DATE______________________________

1. Does he like to look at books?

2. Does he like to be read to?

3. When did you first notice he could sit and listen to a story?

4. Do you find much time to read, yourself? About how much time per week?

5. How about your husband? Does he read much at home? About how much per week?

6. Can he play alone now or does he require a lot of attention?

7. How about as an infant, did he require a lot of attention?

8. What kind of toys does he like?

9. How does he entertain himself?

10. What kinds of things does he like to play with sibs or friends?

11. Does he ask a lot of questions yet?

12. Does he have any favorite places he likes to go? - i.e., park, supermarket?

13. Does he have a favorite toy he takes to bed? blanket?

CHILD'S NAME________________________________ DATE____________________________

14. Anything he carries around during the day?

15. Was he nursed? bottle fed? both?

16. When was he weaned?

17. Did he have a pacifier? Does he still use it? When?

18. Does he suck his thumb? When?

19. Do you have any trouble with his getting into dangerous situations? running into the street, playing with knives, stove?

20. What are his favorite TV programs? (estimate hrs. per day)

21. Do you remember when he first began to use sentences?

22. Is his language at his age about the same as your other children? Describe.

23. Does he talk to himself much at play?

Rating of Child

Name ______________________ Date ____________ Observer ______________________

I. MOOD

COMMENTS

5. happy - child obviously very happy and at ease. Plays happily, "bubbles with enthusiasm"
4.
3. content - passively content, appears accepting of situation
2.
1. sad - very unhappy child, distressed; whines and cries
0.

II. EXPRESSION OF NEEDS

5. very forceful
4.
3. moderately forceful
2.
1. very passive
0.

III. MANNER OF EXPRESSING NEEDS

5. mostly verbal
4.
3. some fussing, some verbalization
2.
1. mostly physical, including crying or whining
0.

IV. TENSION

5. very relaxed
4.
3. well-balanced
2.
1. very tense
0.

Page 2 - Rating of Child

Name______________________________Date________Observer____________________________

V. ACTIVITY LEVEL

COMMENTS

5. high - very active, much running, inability to sit for long periods of time
4.
3. moderate
2.
1. low - little physical activity
0.

VI. INDEPENDENCE

5. very independent - wants to do things for self including dressing and ideas for activity; able to entertain self for long periods of time, self motivated
4.
3. moderate degree of both
2.
1. very dependent, unable to entertain self without adult
0.

VII. SOCIABILITY

5. child very outgoing and friendly
4.
3. moderately outgoing
2.
1. withdrawn - child very shy & retiring
0.

VIII. CHILD SELF-CONSCIOUS OF OBSERVER

5. much
4.
3.
2.
1. none
0.

Page 3 - Rating of Child

Name________________________________Date_______Observer______________________________

IX. CHILD AS VERBILIZER

COMMENTS

5. very garrulous
4.
3.
2.
1. very quiet
0.

X. A. AMOUNT CHILD TALKS WITH MOTHER

5. much
4.
3.
2.
1. none
0.

B. AMOUNT CHILD TALKS WITH SIBS

5. much
4.
3.
2.
1. none
0.

C. AMOUNT CHILD TALKS WITH SELF

5. much
4.
3.
2.
1. none
0.

APPENDIX B

Excerpts from
the Family Interaction Transcripts
in Study I

APRIL 22, 1970 Ebe Emmons 22

11-20am.

MOTHER	CHILD
	TOMMY: What aquarium?
With all the fish.	With the dummies.
That's the museum we're goin' to see the mummies.	
	Are they real Ma?
Sure they're real, and they're all wrapped up in the bandages and they go wooooo.	
	MICHELLE?: There's men in there, huh?
Well they were men once. But they're dead and they're wrapped all up in bandages, and they're called Mummies.	
	TOMMY: No sa, they ain't real.
Course they're real. Well when we go there I'll show you how real they are.	
	There's men in there.
I know they're all rotted, they're not real men. You see where their skin is all rotted. That happens to you when you die.	
	MICHELLE: Oooh--oooo.
You scared? OOoooo.	
	But how they come alive?
They don't come alive, they're dead.	
	TOMMY: How come they're walking around?
Do you see them walking around? They used to.	
	Weren't they dead like this. (Growls)
They gut them in a glass case.	
	Ha-do they break out?
They're just preserved.	
	MICHELLE: I'm sceared.
Like food. THey preserve food in a can, they preserve a body. I'll show you a little baby in a glass jar.	
	TOMMY: A real baby? A baby ___?___ . (Michelle whines, cries) A baby mummy?
No, a real baby.	MICHELLE: I'm scared.
Oh, shut up, you're not scared. No one's gettin' you. No one's gettin' you.	
	Yeees.
Oh hooo hoo hoo	

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MACTAVISH

Date: May 22, 1970
9:25 a.m.

Page: 5 of 19

MOTHER		CHILD	OBSERVER
	LEAH:	Lookit Mom. Lookit. Can I hang 'em on the wall?	
These aren't supposed to be on the wall.			
		On here?	
On the table?			
		Oh here?	
I don't care, put 'em where you want.			
		On here (voice getting higher each time)? On 'ere? On here?	
What's this, this his?			
		No.	
Yah, that's -- yah, that's (the kitty's?).			
		I know that -- yah?	
Oh-oh, here he comes.			
		Hahaha - who comes? Who comes?	
It's the cat.			
	LORRAINE:	It's two cats.	
They're gonna get it.			
	LEAH:	I'm gonna hit 'im.	
Oh, there's a little cat too?			
		Yah.	
OK.			
		Yup.	
Oh, and there's a mousetrap. See the mousetrap.			
		See that's where they live in a hole.	
He's gonna hit him, over the head.			
		That's what hit him!	
This is (to) hit him over the head with...			

[illegible]

[illegible] MacDuff Observer's Name Pamela Almeida

April 29, 1970 [illegible] 2:15 pm. 3:10

MOTHER	CHILD	OBSERVER
(Mother preparing a meal)	I talk to my book. I read this, that's what I was doin. Can't use the chalk either. Gotta put dis crayon on it, only crayons. One, two, three, four, five, six.	
	Would you close that Mommy. See, that me, huh. What's on the top right here. Where is it? Isn't anything on here. Nothin on here. I hear somethin. I here somethin, my Mommy's machine. I hear somethin on here. That's the machine. Oh, dis posed to be open. Ray, Ray was over here and he screamed and, and, I put one, and I put one in my hand.	
	(Garbled). Ma, lookit, the same as this one. I can't hear anything mommy. I got this. I teared a piece off, look. What is it, that's goin around. Can't tie this. Get a big long piece like I show you. (Baby crying in background). I broke dat, why don't you put dat on so Chrystal can play.	
	Mommy, you know somethin, when the other lady was turnin that thin on, I would say, I was gettin somethin and it was me.	
Oh, okay.		
Ummmm.	And now mommy can't get in here. Can you see me? Yes ya can, can ya now, can you now? Yes you can, yes you can, can you see me? Yes you can. See me, see me? Yesterday I was eatin on my table and truck, come see. This is what I was eatin on when I stepped over it. Leave my door open.	
	Yesterday Sharon messed my thing up and she knocked it off, like this (shows how she did it). Momma I got my table truck so you can't get in.	
John, don't go put that away.)		
	Okay.	

FitzGerald

FEBRUARY 24, 1970 Transcriber Jim Kay

3-10pm.

MOTHER	CHILD	
OK, what do you want Mommy to do?		
	Whas your name?	
My name is Mummy. What is your name? What is your name?		O=They talk into mike.
	Mummy. Mummy.	
No, my name is Mummy, what's yours?		
	Mummy.	
No, your name?		
	Mummy.	
Your name is who?		
	It's Mommy.	
This is Mummy, and this is who?		
	Wonald.	
OK, that a boy.		
	OK, wealy? You (Wonald?).	
What is this, Ronald?		O=Mother points to map on wall.
	No.	
What is this?		
	No!!	
Tell me what it is.		O=Mother points to letters on blackboard.
	I said no.	
	(Pause) Now you sing-diz you singm my song?	
What kind of a song are you gonna sing?		
	I gonna sing song, right?	
What's the name of it?		
	Music.	
Music?		
	Yeah.	
Just music, huh?		
	OK. OK, let's sing the music. 'ou want to?	
What is this, Ronald?		
	Da train.	
What happened to the train?		
	It--'show you what:this a happened to do train a long time ago.	
What happened?		
	Well, ma-ya see, this has a batry in it.	
No battery in it?		

MARCH 4, 1970

11am.

MOTHER	CHILD
	DONNA: (crying) I don't want fire!
Oh, all right. (laughs) All right. Donna. Do ya wanna take your nap?	(Donna screams and cries)
	No!
Well stop crying. Stop it.	TRACI: ___?___ on the recorder.
Yeah. She's gonna get all that. When Mrs. Goodwin goes home, she'll hear it. Donna whining. All right.	
	DONNA: (stops crying) ___?___ a big one!
A big what?	A big dinosaur.
I don't know how to make a dinosaur.	(Donna begins crying again) TRACI: Mm- make a dinosaur, a big one. ___?___ (Donna shouts--garbled)
That's not one. If we had a picture of a donosaur, then I could make it.	Let's make a princess. Or Raggedy Ann. Make Raggedy Ann, Mommy.
Wanna make Raggedy Ann?	DONNA: No, I wan'-I wan' him to cut 'im out.
Oh, I can't cut him out. He's not made right. Wanna makd Raggedy Ann? Huh?	TRACI: Here. You two make Raggedy Ann--
	DONNA: I wanna make him eyes!
Raggedy Ann's eyes-how are they made? Are theysquares?	TRACI: No, circles.
Circles? OK.	Raggedy Ann's.
And she has two little-circles. And her nose is round isn't it?	No, it's made out o' a triangle.
A triangle? All right.	And then her mouth an' her--
How is her mouth? Is her mouth square? What's her mouth?	Circle. She's smilin' like dis.
An oval? OK.	

9-15am.

MOTHER	CHILD
	I think I havta wash my hands. (washes hand) Oh, don't do to my hands.
What?	
	My hands, Mama.
Well, you know it's a good idea to pack your sleeves up first since you didn't try to be very careful, o.k.? so you won't get too wet.	
	I was working on the road.
What shall I say? Oh, I don't know that. Rinse the soap off first please.	
	I did.
Oh, all right. See you are going to sing a song - oh, nice, we'll have to get you to sing.	
	Oh, this can rinse off easy. Right, that's right.
	Mama, that's a little bit dirty.
That's o.k., we..we'll wash them very well before we eat lunch. o.k., what was that song you were going to teach me?	
	Oh, here we come marching down the street.
(Repeats)	
	Oh, no, that's not the (?) song.
Oh, it isn't?	
	You don't know that song do you?
I guess not.	
	I singed it when I was one year old. Oh, the silly silly man. There! Do you know it?
I would have to hear it a few more times before I'd really know it.	
	Oh, my - oh.
How about singing one of the other songs that you really truly know. How about singing?	

ily Name FitzGeorge
Transcript #
of Observation March 25, 1970 Transcriber Mrs. Carroll
Page # 9 of 30

ER	MOTHER 3pm.	CHILD	TRANSCRIBER OR OBSERVER
	The library is going to be in the water?		
		Yeh.	
	What will hapeen to the books?		
		Nothing.	
	Oh.		
		They'll be inside.	
	Oh. Is it going to be on top of the water or is it going to be down under the water?		
		Down under the water.	
	Then the books are going to get wet.		
		No. It's going to be down there.	
	What if someone opens the door?		
		Under water?	
	Was the library in the water?		
		It was.	
	What if someone opens the door?		
		Way under there? I can't get down there.	
	Oh, then what good is the library?		
		Well, the library is up here.	
	Oh, you moved it. O.K.		
		The water's down there.	
	Oh, oh, I see. O.K., O.K. In here? Inside? O.K.		
	Does he sit?		
		No.	
	Sure he does. You can put him along side.		
		Then can see it?	

APPENDIX C

Study I Bibliography

APPENDIX C

Study I Bibliography of Studies of Mother-Child Interaction with Special Attention to Language Development

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APPENDIX D

Study II Experimental Tasks, Instructions, Procedures and Test Sentences

Appendix ~~B~~ D

A ________________________________

B ________________________________

TASKS

1. Discriminability
Mother-child production board (rotate board after each picture, i.e., after both children have done same picture. Time response for each child for each picture.

2. Boxes with black mother and children
   (1) B turns back, places M&M, A encodes whole family on couch.
   (2) A turns back, places M&M, B encodes children in bed.

3. Cartoon Boxes
   (1) B turns back, places M&M's, A encodes policeman putting Mutt in cell.
   (2) A turns back, places M&M's, B encodes judge with gavel.

4. Production Board - mother and child
   (1) A encodes picture 2 (baby feeding mother)
   (2) B encodes picture 5 (mother eating, baby no food)

5. Third Man - Cartoon Boxes
Adult (Jean)-child-child-adult (Kay)

   (1) Jean encodes (family on couch, policeman and cell)* to A, A encodes same to B and then to Kay

   (2) Jean encodes (children in bed, judge with gavel)* to B, B encodes same to A and then to Kay

6. Wugs

7. Sentence Completions

*USE EITHER SET OF PICTURES

APPENDIX D
(continued)

INSTRUCTIONS

Discriminability: Mother-Child Production Board. (Materials: large board, two sets of pictures in same order, face up).
"See this board? There are all kinds of pictures on this board. We're going to give each of you some pictures that match the pictures on this board. These pictures are exactly the same as the pictures on the board. Now I'm going to give you a picture, and I want to see how fast you can find the picture on the board that's exactly the same."
Demonstrate with top picture, then turn piles of pictures face down and proceed with experiment.

Picture Boxes: Mother and Children (Materials: 8 boxes, screen, mother and child pictures, M&M's).
"Here's a game called 'Hide the M&M'. First we're going to give you each 4 boxes. Each set of boxes has 4 different pictures. (Turn to each child and demonstrate) Your boxes are just like your boxes. See, this picture is like this one. (etc. demonstrate all 4 pictures). Can you see that they look the same? Now, B:__________ I'm going to hide an M&M under one of your boxes while you're not looking -- you're going to turn your back. I'm going to put an M&M under A's:______ box that is exactly the same. So both of you will have M&M's under boxes that are exactly the same. Then you're going to turn around and look at the boxes and A:________ will tell you where the M&M is. O.K.?" (Hide M&M) (To Child A:__________ after Child B:_________ has turned around again) "Now you tell B:________ all about the picture where the M&M is. Tell him all about that picture so she knows what picture it is. Then you can both get the M&M's."

Cartoon Boxes: "You did so well I think we ought to try the same thing again but we'll use some other pictures. I'm going to give you each 4 more pictures that are different. You both have pictures that look exactly alike again. See, this one looks like this one,"...(etc. demonstrate all 4 new pictures) "O.K., now we'll do the same thing -- I'll hide an M&M under one box of each set and one of you will have to tell the other one about the picture where the M&M is. O.K.?" (Hide M&M's etc.) "Now B:______, you tell A:________ all about where the M&M is. Tell him all about that so he knows which picture it is."

Production Board: A:_________ is going to tell B:_________ all about one of these pictures on this board to see if B:________ can guess which picture A:______________ is talking about. O.K.? Now A:_________ you tell B:____________ about this picture (experimenter points to picture), and B:_______ you look at all of the pictures on the board and see if you can guess which picture A:__________ is talking you about."

Third Run Cartoon Boxes: Adult-Child-Child-Adult.
"Now we're going to play the M&M game with these boxes again. But this time Experimenter1:_____________ is going to play too. First, B:_________ will go outside (with experimenter 2) so he can't hear us, and then I'll hide an M&M under A's:____________ box so he can't see it. Then Experimenter 1:____________ will tell A:____________ about the box where the M&M is hidden. Then A:____________ guesses where the M&M is, B:___________ (and experimenter 2) will come back into the room and A:______________ will tell B:______________ about the same box where the M&M is hidden to see if B:________ can guess where it is, O.K.? Then after, A:_________ will go outside and Experimenter1:___________ will tell B:____________ and we'll do the same thing, O.K.?"

(Follow directions but after first child has told second child, have first child again tell either experimenter 2 or 3 who has pretended not to listen or remember)

APPENDIX D

Story - completion
Sentence Production

Instructions: I want to see how well you can say some things for me, and I will help you. I will tell you something, then you will tell me the ending.

1. **V + complement - Intrans. (Imperative)**	My friend comes in. I want him to sit down. I say to him: (what?)
2. V Transitive (Imperative)	My little son eats lunch. He has not touched his milk. I want him to drink it. I say: (what?)
3. WH - Question	Jane is looking for her shoes. She asks her mother (what?)
4. Embedded	The children were being too noisy. Mother was annoyed. She wanted...(what?)
5. Comparative	Little Johnny couldn't reach the cookies. He wasn't tall enough. He called his sister. She reached the cookies for him. How come she could and he couldn't?
6. N + V - Intransitive (Indicative)	The baby smiles. I want the baby to laugh. I tickle the baby. What happens?
7. Yes-No Question	Mother sent Johnny upstairs to wash and brush his teeth. When he came down, she wondered if he brushed his teeth. What did she ask him?

APPENDIX #D
(continued)

8. Future	Father is going to smoke his pipe after supper. Supper is almost over. What will happen when supper is over? Father (what?)
9. Passive	A little girl went too near the angry dog. What happened to her? She (what?)
10. Adjective noun (Quality)	I picked up a dish. It was dirty. What did I pick up?